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W A R N I N G

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MEDICAL AND BIOLOGICAL SCIENCES

Medicine and Public Health

WUHAN MEDICAL SOCIETY HOLDS ACADEMIC CONFERENCE ON ABDOMINAL SURGERY --
Peiping Kuang-ming Jih-pao, 19 May 63, p 2

Recently the Wuhan Municipal Society of Medicine, Pharmacology, and Health opened an academic conference on abdominal surgery. This conference paid special emphasis to the exchange of experiences in the field of h hepatotomy, hypertension of the portal vein, and hepatic and gall stone operations. Surgeons from 26 provinces and municipalities were invited to this conference. At this conference, 244 papers were presented. Since the liberation, many medical workers in clinics in the large and average-sized cities throughout China have complete experience in the technique of hepatotomy and have also expanded their field to include treatment for carcinoma of the liver, hepatapostema, hemorrhage of the biliary ducts, hepatolithiasis, etc. In the research of hepatotomy, papers were presented dealing with the development of clinical studies, corrective surgery of the liver, and vital and pathologic changes after surgery....

After confirming through clinical study that a patient had an advanced case of cancer with no hope of cure through surgery, a method was pointed out whereby the suffering of the patient could be lessened by the use of chemotherapy as advanced by the medical department. Furthermore, in this aspect the surgeons and pathologist in Wuhan City are working together, studying the pathological changes of liver cancer and discussing other changes in liver cancer, as well as the relationship between liver cancer and hepatocirrhosis.

At the symposium, late stages of schistosomiasis were discussed, and methods of treatment in the villages were spelled out by acknowledging the experiences of health workers in Shanghai and Wuhan areas.

PROFESSOR HUANG CHIA-SSU REVEALS PROGRESS IN CHINESE SURGERY --- canton,
Chung-kuo Hsin-wen, 5 May 63, p 6

A correspondent of this newspaper recently visited Prof Huang Chia-ssu (7806/1367/7475), a prominent surgeon and president of the Chinese Academy of Medical Sciences, while the latter was attending the Wuhan scientific conference on abdominal surgery.

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A man of nearly 60 years of age, Professor Huang is mentally alert. He discussed in great detail the rapid development in heart surgery in China over recent years. He said that we can already operate in this forbidden area and we have already grasped such new scientific processes as "extracorporeal circulation" and "hypothermia" which are closely related to heart surgery.

Prof Huang Chia-ssu said that hypothermia is a recent innovation and that it is especially since 1958 that it has enjoyed a rapid development in China. Chinese medical workers, working closely with engineers, technicians, and laborers from industry, have built "heart-lung machines." Thanks to this equipment, physicians can open up the patient's heart and perform the operation anywhere from a matter of 10 minutes too a few hours. Recently, Chinese surgery progressed further and used the new process of "deep hypothermia and extracorporeal circulation" which has brought about even better operative results.

Before the liberation, Prof Huang Chia-ssu worked in the Shanghai Medical College, which then was the best medical and scientific facility in the entire country. Thinking back, he said that at that time, the specialists in foreign countries were already conducting heart operations or had started research in heart operations, while the specialists in China were only doing stomach and gall bladder removals. Only 100 or so lung removals had been performed in the entire country.

Huang Chia-ssu said that in the past, Chinese physicians attending international conference did not express themselves freely; now this is greatly changed. Since 1957, China has begun to participate in international conferences on surgery, where Chinese specialists have been making scientific reports at every meeting. At present there are 29 professors from China who are members of international surgical associations.

NEW SURGICAL TECHNIQUE EMPLOYED BY SHANGHAI INSTITUTE OF TRAUMATOLOGY --
Tsiping, Kuang-ming Jih-pao, 30 Mar 63, p 3

By employing a new surgical technique, the Shanghai Institute of Traumatology has reconstructed the thumb of a patient, Huang K'e-jung (7005/0344/3579), so that the sense of feeling of his thumb was recovered to a certain degree and its temperature restored almost to normal. Huang K'e-jung lost the thumb of his left hand at work in 1960. At that time, the doctors at this hospital reconstructed a thumb by using the skin from his abdomen. However, this new thumb did not have any sensation and since the supply of blood was insufficient and the skin temperature was rather low, the thumb became red during winter time, swollen and ulcerated.

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After continuing their research on the nerve and blood systems of the injured patient, orthopedic surgeons Chou Lien-chi (0719/6647/0967), Tao Chin-chun (7118/6930/3196), and others made another attempt at surgery during the latter part of last year. They grafted upon the reconstructed thumb a nerve and a blood vessel taken from the right side of the middle finger of the left hand and a large piece of skin, the size of a cocoon, from the tip of the finger. This was a very delicate operation. Although the blood vessel and the nerve transplanted in this case were only 1/4 the size of a match stick, they were not injured.

Three months after the operation, the skin temperature of the thumb of Huang Ke-jung rose considerably, and its coloration reverted from deep red to normal and the sensory nerves of this thumb regained a sensation -- felt a stinging sensation from a slight prick of a needle. Last winter no inflammation, swelling, or ulceration developed. Moreover, the patient's middle finger did not suffer any adverse condition. At present, Huang has already been released from the hospital and resumed normal work.

Since December 1962, the Shanghai Institute of Traumatology has performed three successful similar operations using this new technique.

PEIPING HSUAN-WU HOSPITAL PERFORMS SURGERY ON TUMOR OF THE ORBIT -- Canton, Chung-kuo Hsin-wen, 8 Mar 63, p 5

The Hsuan-wu (1357/2976) Hospital in Peiping has restored the normal eyesight of a woman after performing a surgical operation on a 5 year-old tumor of the orbit. This operation was performed on an actress named Miss Yen Ling (0917/3781). After examination and consideration of various points such as the need of surgery to remove the tumor but not leave scar on the face, the doctors decided to take the advice of a neurosurgeon to make an incision on the forehead above the hairline and then use a saw to cut through the cranium. After the ophthalmologist opened the upper part of the orbit, he removed from the upper and rear part of the eyeball a dark red tumor. The entire operation required 3 1/2 hours to complete.

Seven days after the operation, the visual acuity of the patient improved from 0.5 to 1.0 [according to Landolt's test chart, 1.0 equals 6/6 meters in Snellen's test chart, or 20/20 vision]. On the 12th day, the patient was well enough to be released from the hospital. Today there is no scar visible on her face. She is now rehearsing for a new play and will soon be appearing on the stage again.

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The eye specialist at this hospital has performed six similar operations, all with equal success.

REMARKS BY PROMINENT MEDICAL EDUCATOR ON CANCER -- Canton, Chung-kuo Hsin-wen, 20 Apr 63, pp 6-7

In a recent newspaper article published in the Shanghai Wen-hui Pao (Dr) Wu Heng-hsing (0702/1854/3281), A returned overseas Chinese from Africa, head of the Peking Cancer Hospital, and a prominent medical educator on tumors, remarked that since the advancement of medical sciences and the elevation of therapeutic and health standards, the number of cases and death rates due to cancer have not increased during recent years, but have been on the decline.

Wu Heng-hsing explained that according to vital statistics, it seemed that since the beginning of this generation, records have shown that the incidence and death rates due to malignant tumors have been increasing gradually and have now surpassed that of other diseases. This notable increase is largely due to the fact that the etiology of such diseases as high-blood pressure and malignant tumors is still unknown and that these diseases as yet cannot be controlled, while the causes of some former high-death-rate diseases such as tuberculosis, cholera, typhoid, pneumonia, and others, have been discovered, their sources controlled and the death-rate lowered.

Wu Heng-hsing also stated that in a certain country where sanitation and health protection prevailed and living standards are high, where the average life expectancy of the people is prolonged, and where there is an increase in the number of persons over 40 years of age, the number of persons developing cancer among this elderly group was comparatively high. This is one reason for the recent high incidence and death rate from cancer. Furthermore, another reason why the incidence rate of cancer showed a statistical increase is due largely to more reliable modern clinical techniques.

In this article, Wu also pointed out that, recently, the incidence and death rate due to masculine lung cancer is increasing. According to statistics, from 1937 to 1962 this death rate has increased five times. Although this increase has some relationship to the increasing number of person smoking cigarettes, smoking is but one of the contributing factors causing cancer; other cases can be blamed on foul city air.

In discussing whether or not cancer is a new type of disease associated with some maladjustment in society, Wu Heng-hsing took a negative stand. He presented evidence to prove his point by saying that in the ancient Egyptian inscriptions of 2,500 years B.C., discovered in the

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pyramids, there was already descriptions of malignant tumors. Present day medical science has confirmed that this disease as recorded is the same as present-day cancer. In the historical book Chou Li (0719/4409) (The Book of Rites, Chou Dynasty) of ancient China, 1100 B.C., medical specialists have also recorded a special department dealing with tumors (oncology).

DISCUSSION OF A NEW VARIETY OF LUNG FLUKE -- Peiping, Jen-min Jih-pao, 14 May 63, p 5

Not very long ago, Ch'en Hsin-t'ao (7115/1800/7118) questioned whether or not the lung flukes (paragonimiasis) are a new genus of trematodes. This debate is still left unsettled.

In 1955, Chung Hui-lan, president of the Sino-Soviet Friendship Medical Association, in Peiping, and later in Szechwan, discovered a new form of lung fluke disease. He surmised that this new sickness was caused by a new variety of lung flukes and called it "Szechwan lung flukes." A report on this new discovery by Chung Hui-lan appeared in the Chinese Medical Journal and the Peoples Health Magazine.

According to the opinion of Ch'en Hsin-t'ao, a professor at the Chungshan University, there is still some doubt about this discovery. He said that this new variety of lung flukes is the same as that announced in 1959 as a colony of new cystic lung flukes, as described in the Chungshan Medical College Annual Report, Chungshan University Journal, Zoological Bulletin, and the China Medical Journal.

According to Ch'en Hsin-t'ao's opinion, the new variety of lung flukes, as reported by Chung Hui-lan, possessed the same properties and characteristics as the cystic form of lung flukes. The question of chief host of this variety of lung flukes was brought up. According to Chung Hui-lan, the "Szechwan lung flukes" have as their chief host domestic cats, wild cats, and dogs, but the cystic form of lung flukes have as their chief host only the badger. According to Ch'en Hsin-t'ao, a study must be conducted of the chief hosts for this new variety of lung flukes, and at present it can not be established that only the badger is the host of the cystic lung fluke.

Chung Hui-lan pointed out that Ch'en Hsin-t'ao only gave the special characteristics of the new type of Szechwan lung flukes by describing the parasite, the ova, larva, reservoir host, endemology, results of experimental tests, observation of clinical cases, pathological changes, etc. At present, only accurate descriptions of the ova and larval stages of the cystic lung flukes have been reported. Speaking of the larval stage alone, these two types of lung flukes have many characteristics in common but also have some dissimilar characteristics.

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Furthermore, the larval stage is not the only way of distinguishing the genus of these parasites. For example, up to now, there is no way of distinguishing the form of tapeworms infesting the intestines of man and that of pork, but judging from their malignancy, many people consider them as two types of tapeworms.

At present the various forms of the lung flukes, however, cannot be distinguished. Distinction can only be made through long periods of observation. Therefore, the final outcome of this debate can only be determined by further research.

LET CLINICAL DATA SERVE THERAPY -- Peiping, Kuang-ming Jih-pao, 8 Apr 63, p 2

To elevate the standard of therapy, the medical doctors of the department of traumatology and osteopathy of the Chi-shui-tan (4480/3055/3389) Hospital in Peiping placed heavy emphasis on the accumulation of medical history data and the consolidation of clinical experiences.

Two years ago, a person suffering from severe burns was given careful treatment and cure. and most of his burned regions healed. Only a heavy layer of scab remained in the area where the burn was most severe. If this scab did not drop off in time, it would break out in sores and would cause an infection. The doctors had thought of many methods to cause the scabs to peel off but they all felt that in this case these methods were not absolutely suitable. The doctors then went to "discuss and study" past medical histories of other patients who were cured of burn lesions, conducted research work on these medical histories, and analyzed the reason why the application of one kind of scar removal by surgery was successful for one patient and not for another and why some persons have to use other methods to remove scab lesions. After many serious discussions, the doctors finally arrived at a suitable method of removing scab lesions. Thereafter, this same method was applied to most scabs on burnt patients with similar good results.

The above matter is one of the thousands of cases in which the doctors have conducted medical research. To facilitate research work on patients confined to bed, the doctors have decided to set up card files for medical histories and accumulate clinical data. They understand that medical history is the record of clinical work and is the most basic data of clinical research. This type of constructive work is very essential to elevate the standard of medical therapy. For this reason, the hospital recognized the work of resident physicians, Chang Chung-ming (1728/0112/2494) and Ts'ao Ta-hsin (2580/1129/9515) in spending some time in writing data on medical history card files.

SHANGHAI MUNICIPAL HOSPITAL OF THORACOPATHY -- Canton, Chung-kuo
Hsin-wen, 3 Mar 63, p 7

In the last 5 years, the first thoracopathic hospital in China has been under construction in Shanghai. Remarkable success has been attained in the field of clinical therapy and scientific research. Moreover, the therapeutic level for the treatment of thoracic ailments has been elevated. During this period, this hospital has advanced 27 new surgical operations and new techniques and developed 11 new types of diagnostic methods such as: surgical equipment for the treatment of mitral valve construction, complete surgical removal of aortic tumor, replacement of the arch of the aorta by surgery, and surgical operation in serious cases of pulmonary tuberculosis. The medical doctors at this hospital have performed more than 3,600 major surgical operations in the thoracic area, including cardiopathy, pulmonary tuberculosis, and tumors, among the 15 types of common diseases of the thorax. Eighty-seven percent of the patients who have been treated and released from this hospital have now completely recovered their health.

The result of scientific research conducted by the doctors at this hospital should be noted. For example, in the past the surgical treatment of the bicuspid valve construction was performed by a thoracotomy through an entry on the left side of the thoracic cavity. However, this method of separating and dilating the bicuspid valve was not entirely satisfactory. As a result, Lan Hsi-ch'un (5663/6932/4783), assistant director of this hospital and a specialist in thoracic surgery directed a group of surgeons in some research work of a complicated nature. By 1960, they had successfully tried out a new method of separating the bicuspid valves through the left cardiac ventricle by means of a Chinese-made valve dilator. When an ectasia of the mitral valve construction is absolutely necessary, this new technique of separation brings great results, and cases of mitral incompetence or regurgitation rarely occurred. This new therapeutic method is recognized recently, both domestically and internationally, as most successful.

Innumerable successes have been achieved also in the research of surgical techniques for the removal of tumors in the aorta region. In 1958, the removal of tumors in the aorta region by surgery was completely successful; in 1960, an operation on the arch of the aorta under hypothermia was performed successfully; in 1961, surgery of the aorta under hypothermia and bridge-grafting of artificial blood vessels was successful; and in 1962, by the combination use of abnormal low temperature, changing the flow of the left coronary blood circulation, establishing blood circulation outside the body, lowering the temperature of certain parts of the heart so forth in connection with direct visual operation, the complete alteration of the aorta arch by surgery was accomplished.

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This hospital is still conducting research work on artificial blood vessels and materials for the repair of the heart. In 1958, the first satisfactory clinical use of a Chinese-made artificial blood vessel of plastic cellulose was made. At present many types and forms of artificial blood vessels are available for use to replace any large or medium-sized blood vessels in the body. They are also producing Chinese-made silk suture material for repairing a damaged or defective heart.

VISIT TO LHASA TIBETAN HOSPITAL -- Peiping, Kuang-ming Jih-pao,
2 Apr 63, p 2

[Extract from an article written by two NCNA reporters in Tibet.]

After the local democratic revolutions started in Tibet under the guidance of the party, the Lhasa Tibetan Hospital was reconstructed to become the present Tibetan hospital. Under the guidance of Chiang Pa-chih-lieh (3068/1572/6375/0441), this hospital has been expanding continuously: hospital personnel have increased more than five times, and new systems of registration, tour of duty, pathological discussion, on-the-job training, roving medical services, and so forth have been put into effect. At the same time, the dregs of long-standing feudalistic superstitions have been removed. In a period of less than 4 years, the Tibetan hospital has handled more than 390,000 hospital cases and, during the busy farming seasons, the doctors also went among the masses of the people in the villages and in the mountainous areas to offer medical services.

A few years ago, this hospital area consisted of dilapidated houses with a bleak and dingy appearance. Now, this place has been completely renovated and made absolutely clean. The row of "low-class" houses in front of the hospital has been reconstructed with large, wide windows and white painted walls. The surrounding premises are kept spick and span. The buildings were made into a registration room, pharmacy room, medical and surgical offices, and reception rooms for gynecology and pediatric patients. Among the patients found on the hospital premises are farmers from outlying districts, herdsmen from the pastoral lands, and handicraft workers from the towns and small cities. Some have traveled several tens to several hundreds of li either on horseback or by motor vehicles to come to this hospital to receive medical care entirely free of charge.

A visit to the new pharmaceutical warehouse reveals rows of neatly arranged large counters with apothecary jugs and bottles containing medical solutions, pills, powders, and raw materia medica. Last year,

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the Chinese people's government allocated 120,000 yuan to the Tibetan hospital for drugs. Hospital personnel went to the mountains to collect raw materials for medicine. A total of over 30,000 catties were collected, and now, all told, more than 400 types of materials are available for the preparation of medicine prescribed for out-patients.

The party and the government are very much interested in the training of Tibetan medical personnel. Their training period has been greatly shortened by consolidating the teaching of theory and practice. Under this new arrangement, 15 Tibetan medical men have been graduated, and another group will be graduating this year. These men all have a knowledge of the basic theory of Tibetan medical science and are familiar with the treatment of various types of diseases.

DOCTORS OF TRADITIONAL CHINESE MEDICINE TEACH THERAPY IN INNER MONGOLIA --
Peiping, Kuang-ming Jih-pao, 10 Apr 63, p 2

Recently the Health Office of Fukien Province sent a medical team to Inner Mongolia Autonomous Region to teach the method of "shriveling hemorrhoids" in the treatment of internal piles. More than 30 surgeons and traditional Chinese medical practitioners in the municipal hospitals of the banners in the autonomous region received practical training of over one month. This medical team also helped the hospital of the Inner Mongolia Research Institute of Traditional Chinese Medicine to establish a section in the treatment of hemorrhoids; furthermore, this team represented the Fukien Institute of Traditional Chinese Medicine in delivering lectures on therapeutic methods, particularly on the use of medical instruments and drugs. While helping to train doctors on the subject of hemorrhoids, this team also examined more than 700 patients with hemorrhoids and treated them, generally with good results.

NINGHSIA FIRST PEOPLE'S HOSPITAL INTENSIFIES TRAINING OF MEDICAL PERSONNEL -- Peiping, Kuang-ming Jih-pao, 8 Apr 63, p 2

Since its establishment and the complete implementation of a system of rules and regulations, the Ningsia First People's Hospital in the Ningsia Hui Autonomous Region has intensified the elementary training of medical personnel in theories and techniques, organized them to study and do research work, and raised the level of their technological work. Since last year, this hospital has intensified training of medical service personnel in medical and requested that young doctors conduct regular physical examinations and apply clinical techniques, keep exact and complete medical records of all cases, and understand the basic principles of treating ordinary sickness and of how to handle ordinary wounds and that senior physicians know the complete theory on their subject, as well as know how to handle complicated

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sickness and perform major operations, and also how to apply certain special therapeutic techniques. In the field of medical assistance, this hospital has set up a complete system of medical service and intensified the technical training in ordinary medical assistance in order to unify work, as well as raise the standard of medical aid. In accordance with the need of different medical personnel in various departments, this hospital has scheduled training in medical theories and special techniques. The hospital director has established many conditions for the purpose of training these medical aid personnel, as for example, simplified discussion meetings, maintaining service training schedules, increasing the subscription of both Chinese and foreign language medical journals and pictorial magazines, enlarging the reading room, arranging chronologically accumulated medical history records, increasing the supply of medical instruments and equipment, and also conducting actual experiments with living animals. Furthermore, this hospital has organized language classes and thus helped the medical aid personnel to raise their proficiency level in foreign languages.

The Ninghsia First People's Hospital also emphasized and encouraged the old physicians to institute clinical research work and to publish their outstanding works. According to statistics, in 1962, this hospital had published more than 70 monographs on various subjects, among which a few were of comparatively high academic standards. Prominent traditional Chinese medical doctor Shih I-jen (2514/6654/0086) is presently assembling and summarizing his 50 years of experience in clinical medicine. To aid the young medical aid personnel, this hospital is having the old doctors guide the young medics, nurturing them step by step, dividing their works, and leading them in order to raise the technological level of these young medical aid personnel.

SIAN MEDICAL COLLEGE CONDUCTS RESEARCH ON K'O-SHAN DISEASE -- Peiping, Kuang-ming Jih-pao, 31 Mar 63, p 2

Since 1958, the teaching and research sections in all elementary courses at Sian Medical College have resolutely conducted general research on K'o-shan (0344/1472) disease. Innumerable successes in this work have, indeed, been useful in the prevention of the K'o-shan disease in Shensi Province.

K'o-shan disease is chiefly confined to the northern portion of the Huang-lung -- Huang-ling area of Shensi Province. Many persons have fallen victim to this disease. The onset is very sudden and the mortality rate is very high, thus becoming a great threat to the masses of peasants in this area. In 1958, upon the requests of the Health Department of Shensi Province, the Sian Medical College actively organized the

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efforts of the teaching and research sections interested in this subject to participate in prevention and research work, requested the college heads to direct a great cooperative spirit among the teaching and research sections, conducted comprehensive research work by taking the opportunity to treat and control the disease of infected persons, and carried out further investigation on the controlling factors in the development and causes of this disease and the means of quickly eliminating it.

By elucidating long-accumulated knowledge from various studies of this subject, a pattern of the development of K'o-shan disease can be discovered very quickly, to be followed by early diagnosis and treated. Also, a few remarkable and effective drugs have been discovered for the treatment of this disease, making it possible to reduce the fatality rate among acute cases and to improve prevention work.

The teaching and research sections in pathology and physiology will soon bring together several hundred cases of acute K'o-shan disease to examine and analyze them. Furthermore, they will examine both domestic and foreign reports on numerous cases of cardiogenic shock for they realize that this systematic research can explain the facts of cardiogenic shock in acute case of K'o-shan disease. The teaching and research section in pharmacology administered large doses of vitamin C to patients stricken with acute K'o-shan disease, and the therapeutic results were remarkable. This suggested a new pharmaceutical approach in research therapy, the administration of large doses of vitamin C for cases of myocarditis and cardiogenic shock. After a few years of study and research, it has shown that the injection of vitamin C as a supplementary nutrient increases the flow of blood, improves the nourishment of the myocardium, strengthen the function of the heart, etc. This research on an ideal drug is for the purpose of treating myocarditis and cardiogenics shock. The teaching and research section in chemistry is analyzing the chemical content of the water, soil, and foodstuffs in the infected area; the teaching and research sections of histology and embryology are going ahead with their research work in histochemistry by analyzing certain internal organs infected with K'o-shan disease; the teaching and research section in biochemistry is also carrying out research work in inorganic salt injections with definite success.

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EXTENSIVE USE OF POLIO VACCINE IN PEIPING AREA -- Peiping, Pei-ching Jih-pao, 11 Mar 63, p 2

In late February, widespread inoculation of live polio vaccine was scheduled for children from 2 months old to 7 years old in Peiping Municipality and its suburban and countryside areas. According to statistics, in Ch'ao-yang, Hai-tien, and Tung-cheng Suburban Wards, some 390,000 children have already received their first shot of Type I Vaccine by 1 March. Many individuals have actively helped the health department to administer the inoculation of live polio vaccine. The Tung-pa Commune of Chao-yang Ward has previously spread the idea of protecting children's health inoculation of polio vaccines. To ensure successful work in administering the vaccine, Chao-yang and Hai-ping wards have first carried out good preparatory work. Two shots of this type of vaccine are required at an interval of one month. Type I of this vaccine was administered to the children of Peiping on the first shot. By the 20 March, this first shot should be completed. The second shot of Type II and Type III is scheduled to begin by mid-April.

PATRIOTIC HEALTH CAMPAIGN STARTED IN CHINA -- Peiping, Kuang-ming Jih-pao, 14 Apr 63, p 2

During spring and summer when production work is at its peak, it is also a period when disease carrying insects like flies and mosquitoes multiply in large numbers. Taking advantage of good spring weather, a patriotic health campaign should be carried out during spring and summer to eliminate the four pestilences, propagandizing hygiene. Likewise, a campaign against rats should be carried out. By eliminating breeding places of mosquitoes, flies, and rodents during the spring, the number of these pests will be greatly reduced, and thus the development and prevalence of all kinds of diseases will be reduced.

In the urban areas, much effort must be spent in environmental sanitation and food sanitation. When aiding agriculture in the delivery of fertilizer, breeding places of mosquitoes and flies must be eradicated; trash heaps, human waste, and polluted water must be taken care of and eliminated, so that the towns and cities are kept clean and sanitary. Health conditions on the premises around establishments, factories, schools, as well as public culture centers and recreation areas, should be improved further. In the food-processing industry, sanitation throughout the entire preparation process should be increased by more frequent inspections and supervision. In the villages where there is a desire to collect fertilizer, certain health measures must be taken, such as controlling the use of human waste, improving housing conditions, protecting sources of water supply, warning against drinking raw water, etc., all in order to prevent the spread of infectious intestinal diseases.

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INNER MONGOLIA HEALTH DEPARTMENT COMMENDS OLD CHINESE PRACTITIONER --
Peiping, Kuang-ming Jih-pao, 19 May 63, p 2

Not long ago, the health department of the Inner Mongolian Autonomous Region commended Ch'en Ch'ing-lien (7115/3237/3425), a prominent practitioner of traditional Chinese medicine, for his absolute devotion to protecting the health of the people. Ch'en, an octogenarian, has had several tens of years of excellent experience in his profession, especially in acupuncture. He has done outstanding work in the treatment of syringomyelia, infantile paralysis, hemiplegic paralysis, facial paralysis, and so forth. His method of treatment is to combine the use of experiences drawn from classical records and general treatment with an emphasis on acupuncture and drugs. In the treatment of appendicitis, he used a brew of Rhizoma Achei and Moutan (Paeonia suffruticosa); and for hepatitis and splenitis, a brew of Radix bupleuri.

Ch'en Ch'ing-lien is elderly, but is still active. Since 1958, he has compiled case histories totaling more than 400,000 words and has now written a book, entitled "The Perpetuation of Acupuncture Methods," which will soon be released. Ch'en has taken on great responsibilities. Whenever he encountered difficult cases, he would conduct careful research and read all kinds of books; after using a certain kind of medicine and the result proved successful, he would record it immediately and continue his research on this treatment. During recent years, the authorities have taken care of his well-being, requesting that he no longer handle clinical cases, but he was still willing to take on special cases when requested.

During more than 60 years of medical services, Ch'en has nurtured more than 20 disciples who have adopted his special medical techniques and perpetuated his spirit of assuming great responsibility of caring for his patients. This practitioner, Ch'en Ch'ing-lien, is recognized as an advanced worker in Hu-ho-hao-te Municipality of the Inner Mongolian Autonomous Region.

SZECHWAN MEDICAL PERSONNEL CONDUCT HEALTH WORK IN VILLAGES -- Peiping, Jen-min Jih-pao, 9 Apr 63, p 2

Recently in Szechwan Province, medical personnel in the villages are calling on the farmers working in the fields and visiting the households of the commune workers. The majority of the medical personnel come from the local and hsien hospitals, as well as from the people's health clinics.

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Many cities, special districts, and hsiens have trained a large number of health workers among the basic level cadres and the masses of the people. In Cheng-tu, Tzu-Kung, Lo-shan, Nei-chiang, and I-ping, a total of more than 5,200 medical personnel were recruited from various medical organizations to help train more than 13,600 pharmacists and health workers. These medical workers will be able to administer simple medical treatment, keep medical records, deliver medicine, report on conditions of illness, and carry out preventive measures among the masses of the people against communicable diseases.

One of two medical work teams of the pest-control stations of the Szechwan Health Department went to Chien-yang Hsien in the cotton belt to conduct investigation and research on common sickness in the villages and undertake preventive measures. Another team went to Peng-hsien to investigate the underlying cause of dermatitis among the farmers. More than 90 persons were sent from the Szechwan Research Institute of Parasitology to Mien-tsu, Hsin-tu, Lo-shan, and Ta-tsu to go among the five communes and 23 production brigades and help the communal members to solve their problems in preventing diseases.

MADAME PHOLSENA ARRIVES IN PEIPING FOR MEDICAL TREATMENT -- Peiping, Kuang-ming Jih-pao, 27 Apr 63, p 2

A few days ago, Madame Quinim Pholsena (wife of the late foreign minister of the Laotian Coalition Government, assassinated on 1 April 1963) arrived in Peiping from Hanoi for medical treatment. After her arrival in Peiping, Madame Chou En-lai; Madame Li Te-chuan; Minister of Health; Madame Chang Han-fu; and Ting Hsi-lin, (0002/6007/2651), the vice-chairman of Commission for Cultural Relations With Foreign Countries, and wife came to call on her and give her comfort.

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CHINESE PHARMACEUTICAL INDUSTRY ESTABLISHES PRODUCTION SYSTEM -- Peiping, Kuang-ming Jih-pao, 29 Apr 63, p 1

After struggling with difficulties throughout the last two Five-Year Plans, the situation of dependence on imports of raw material and finished products by the Chinese pharmaceutical industry has undergone a drastic change by the establishment of a rather complete production system. At the present time, every province, municipality, and autonomous region throughout China has its own pharmaceutical manufacturing plants. The types of medicinal products produced from raw materials have increased to several hundred types at present, and their quality has met the standards as set forth by the government. All but a few kinds of medicinal products needed by the people in China for medical treatment can now be basically produced in China. Among these, some products, such as antibiotics, hormones, and so forth, are even produced for export.

After the liberation, the first penicillin manufacturing plant was established in Shanghai. At present there are more than ten plants in China which are producing antibiotic materials and finished products such as: penicillin, streptomycin, aureomycin, syntomycin, tetracyclin, chloromycetin, erythromycin, terramycin, neomycin, and so forth.

During recent years, the development of antibiotics such as compounds of the amino derivatives has progressed rapidly. After successful tests, medicinal compounds such as sulfadiazine and amino-methyl-pyrimidine were placed in large-scale production. After the liberation, the government undertook numerous health preventive and control measures. Pharmaceutical plants everywhere conducted large-scale research and experimental health control projects to discover all kinds of medicine for sickness and parasites. At present, it can be said that already remarkable successes have been accomplished against such diseases as schistosomiasis, filariasis, malaria, and blackwater fever. During the early period of the liberation, blackwater fever was prevalent in Hopeh and Shantung provinces. More than 600,000 persons were victims of this disease, but now it is practically eliminated. Schistosomiasis was prevalent along a belt south of the Yangtze River. After many years of special treatment with potassium antimony tartrate, the great majority of cases were completely cured and the strength of the patient restored. By means of a chemical process, pharmaceutical plants in Shanghai and Tientsin are now able to produce large amounts of quinine (di-hydro) chloride and quinine (borate). These compounds are better than plain quinine.

All areas have developed the production of medical raw material and compounds, including antipyretic and pain-relieving drugs, eye solutions, all kinds of vitamins, glucose, steroid hormones, and antituberculosis medicine.

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K'O-TA PHARMACEUTICAL PLANT IN MUKDEN -- Peiping, Jen-min Jih-pao,
26 Mar 63, p 2

For the last 6 consecutive years, the K'o-ta Pharmaceutical Plant in Mukden has realized greater profits from its production of drugs by the elimination of items that "eat up" the profit. Of the 77 varieties of products produced by the K'o-ta Pharmaceutical Plant, 54 items were produced every year at a profit, and 23 were produced every year with a loss. For the first time, during the third quarter of last year, there was a report of a profit for every item or product produced. The production of plain carbon flakes suffered a loss for the last few years. When analyzing the time required to prepare raw material for producing drugs, it was revealed that the cost of production of a drug compound was exceedingly high. As a result, technicians aid research to discover the use of cheaper material. The result was a better drug compound than the original.

After suffering a financial loss for the last 6 consecutive years in the production of analgesic tablets, the plant was still unable to show a profit, although its production method had undergone study. The plant had even sent investigators to the sales department. Upon requests from consumers, the sales department finally decided to change the method of packing the finished product: four tablets were enclosed instead of two tablets in each box. According to pharmaceutical analysis, this plant discovered that this type of medicine generally requires at least four tablets to be effective; besides there was a large amount of empty space in the two-tablet box. After the pharmaceutical plant had decided to change it to a four-tablet box, each box saved more than one li on packing costs (one li equals 0.1 fen or 0.1 Chinese cent), and thus this product was produced at a profit. Similarly, another product, "wo-kulin" (iocurine?), an eye drop, was also produced at a loss until a study of the bottle was made. One from a different manufacturer was used and the long-standing problem of production cost was resolved.

General Biology and Agriculture

NATIONAL TOBACCO RESEARCH CONFERENCE HELD IN SHANTUNG Peiping, Kuang-ming Jih-pao, 4 Apr 63, p 1

The Tobacco Institute of the Chinese Academy of Agricultural Sciences convened the 1963 National Tobacco Research Conference recently in Weifang, Shantung, which was attended by more than 40 tobacco specialists from several provinces and from the Tobacco Industry Institute of the Ministry of Light Industry.

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Seventy-six research projects were completed by the institute and the tobacco research units in five provinces, Liaoning, Honan, Yunnan, Anhwei, and Kweichow. Most of these projects concerned production. At present, tobacco-growing areas are using improved varieties of seed, which has increased production 10-30 percent and sometimes as much as 40 percent. Chin-hsing 6007, developed by the institute, is being planted in Shantung and yields a 20 percent increase over the original widely planted Ta-huang-chin. [Other examples of increased production through the use of improved varieties of seed are also cited.]

RESEARCH PROVES THAT ORGANIC PHOSPHORUS DOES NOT CONTAMINATE KAOLIANG -- Peiping, Kuang-ming Jih-pao, 23 Apr 63, p 2

The Pharmaco-Dynamics Teaching and Research Section of Mukden Medical College and units of Kirin Agricultural College have been doing research on organic phosphorus insecticides for the past 3 years. Their research proves that the application of Organic Phosphorus 1059 to Kaoliang does not make the Kaoliang poisonous to man or beast. This insecticide is used to kill aphids, which destroy Kaoliang. When national departments first learned of the research being done on this subject, a conference was called in Peiping in December 1961. Last year, Chih-wu Hsueh-pao (Acta Botanica Sinica) carried an article on the subject.

NATIONWIDE CONFERENCE ON CHEMICAL FERTILIZERS CONVENED -- Peiping, Kuang-ming Jih-pao, 22 Mar 63, p 1

A conference of the nationwide chemical fertilizer research network, which was established by the Chinese Academy of Sciences in 1957, convened recently in Peiping. Participating in this research network are agricultural research units from 27 provinces (autonomous regions) and municipalities. The task of this network is to find various kinds of chemical fertilizers and the most effective method of application of these fertilizers for different places, soils, and crops. The experimental stations in the network carry out experiments on the effectiveness of nitrogen, phosphate, and potash fertilizers, comparative experiments on different kinds of nitrogen and phosphate fertilizers, and experiments on the quantity of application of nitrogen fertilizer. Nineteen types of crops are used in these experiments. A great deal of experimental reference material has been obtained and will furnish scientific data for the planned production, distribution, and reasonable use of the country's chemical fertilizers.

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KIRIN INSTITUTE OF FORESTRY CALLS CONFERENCE -- Peiping, Kuang-ming Jih-pao,
17 Mar 63, p 2

The Kirin Provincial Institute of Forestry convened a conference recently to discuss special problems relating to secondary natural forest in the Northeast and Inner Mongolia. Researchers, teachers, production engineers, and technicians from forestry research organs, universities, special schools, and colleges and from secondary forest experimental areas in Heilungkiang, Liaoning, Kirin, and Inner Mongolia attended this conference.

The Northeast and Inner Mongolia are the country's most important lumber-producing areas. Secondary forest occupies about 50 percent of the total forest area and about 20 percent of the entire area. These secondary forests furnish light wood products for industrial and agricultural construction and for irrigation and erosion projects. Subsidiary products raise the income level of the local people. Most of the trees are chestnut oak, poplar, birch, swamp willow, or walnut, all of which are strong, adaptable, and rapid growing. It is only necessary to strengthen administrative control to make these secondary forests a lumber products reserve with a high output of good-quality material.

Since 1958, the forestry workers mentioned above have been doing research on management techniques and scientific theory. They have discussed such theoretical questions as the laws regulating the concept of secondary forests and the classification, distribution, growth, and development of secondary forests. They have initially mastered these problems and have submitted certain views on the principles of management. In doing research on type designations, they discovered that the use of the original principles and methods of designating types of forests were not satisfactory when applied to secondary forest, resulting in further study of this problem. To solve management problems of various kinds of secondary forests, they began to do research on the cultivation of trees between cuttings and the recreation of forest components of important types of forest, such as chestnut oak, poplar, and birch forests. Besides this, they drew up charts on the output of wood products from the important trees in local secondary forests. This work laid the initial base for research work and will furnish guidance for future production practices.

The conferees uniformly maintained that it is necessary to master the natural laws governing secondary forests and to correctly develop managerial activity. They also believed that it is necessary to pay attention to the solution of questions of comprehensive management techniques for different types of secondary forests, principal problems being cutting, cultivation, selective cutting afforestation, and renewal of effective technical standards to reduce production forces and lower costs quickly.

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COOPERATIVE RESEARCH ON METEOROLOGY AND HYDROLOGY FOR FORESTRY - Peiping, Kuang-ming Jih-pao, 12 Apr 63, p 1

The Institute of Forestry and Soil of the Chinese Academy of Sciences, the Heilungkang Provincial Academy of Forestry Sciences, and the Heilungkang Department of Water Conservancy established meteorological and hydrological experimental research bases at I-ch'un on the Lesser Khingan Mountain Range in 1960 and began research on selective cutting of trees, as determined by meteorological and hydrological conditions. These three units met recently in Ch'en-yang to draw up an agenda for the 1963-1965 period.

FIRST INSTITUTE OF PLAINS ESTABLISHED -- Peiping, Kuang-ming Jih-pao, 17 Apr 63, p 1

The country's first Institute of Plains, the Inner Mongolian Autonomous Region Institute of Plains (Nie-meng-ku Tzu-chih Ch'u K'o-hsueh Yen-chin-so: 0355/5536/0657/5661/3112/0575/5430/0626/4430/1331/4282/4496/2076), was established recently in Hu-ho-hao-t'ie. The institute will summarize and disseminate mass experience, conduct research on plains, fodder production, and animal husbandry mechanization, direct the work of the various plain improvement experimental stations, and be responsible for certain research projects. At present, it has departments for the rational use of plains, plains improvement, and fodder production; one laboratory; and one auxiliary testing ground. In the future, it will add an animal husbandry mechanization department and will gradually become a full-fledged research organ.

This institute will establish cooperative relations with Inner Mongolia University, Inner Mongolia Agricultural and Animal Husbandry College, the Plains Construction Bureau of the Inner Mongolia Department of Animal Husbandry, and higher educational institutions within and without the region. It will hire several nationally prominent plains specialists as advisers and to direct research work. Since 1959 the region has established five plains improvement experimental stations and trained more than 100 plains research personnel and political cadres.

COMPREHENSIVE UTILIZATION OF WATER RESOURCES DISCUSSED IN SINKIANG -- Peiping, Kuang-ming Jih-pao, 23 Mar 63, p 2

The Geographical Society of the Sinkiang Uighur Autonomous Region, the Comprehensive Institute of Water, Soil, and Biological resources of the Sinkiang branch, Chinese Academy of Sciences, and the region's Hydraulic Engineering Society convened a conference recently to discuss,

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primarily, the comprehensive utilization of water resources. In the course of the discussions, it was disclosed that Sinkiang had abundant water resources in the form of surface flow, subterranean flow, and in ice and snow. The conferees unanimously agreed that at present the primary utilization of water resources should be that of surface flow water, that subterranean water should be used as a reserve, and that research on the utilization of water in the form of ice and snow should be appropriately developed.

T'IENT-SHAN GLACIER EXPLORED -- Peiping, Jen-min Jih-pao, 6 Apr 63, p 2

Scientific workers of the Glacier Research Station of the Sinkiang branch, Chinese Academy of Sciences, established in 1959, is seeking ways to utilize the water resources of T'ien-shan glacier to support agriculture and animal husbandry production. They are located at the source of the Niao-lu-nu-chi River, a frozen sea 2,500 meters above sea level. T'ien-shan is China's largest glacier, is 4,800 Square Kilometers in area, and contains water equivalent to 2,000 Shih-san-ling reservoirs. [This article is accompanied by three photographs showing scientific workers performing duties.]

NAN-HAI INSTITUTE OF AQUATIC PRODUCTS ESTABLISHED IN CANTON -- Peiping, Kuang-ming Jih-pao, 29 Mar 63, p 2

The Nan-hai Institute of Aquatic Products of the Ministry of Aquatic Products, established recently in Canton, is a further extension of the former Kwangtung Provincial Institute of Aquatic Products. In addition to continuing the strengthening of scientific research in the South China Sea area, this institute will strengthen investigation of aquatic resources, surveys of new fishing targets, and research on important fishing grounds, as well as scientific, technological, and theoretical research on aquatic products in tropical and subtropical waters. The institute has specialists in marine resources, fishing techniques, fresh water fishery, marine cultivation, and aquatic products processing, but does not have experimental grounds and investigation boats for scientific research.

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NEW BOOK ON OCEANOGRAPHY PUBLISHED -- Peiping, Kuang-ming Jih-pao, 3 Apr 63, p 1

Prof Wen Sheng-ch'ang (2429/5110/1603) of the Department of Oceanic Hydrology and Meteorology of the Shantung College of Oceanography is the author of Hai-lang Yuan'li (Principles of Oceanic Waves), recently published by the Shantung Peoples' Publishing House. It is a summary of Chinese and foreign research on the principles waves and a systematic discussion of the laws governing wave variations. It consists of 230,000 characters.

LAKE INVESTIGATION REVEALS ABUNDANT NATURAL RESOURCES -- Peiping, Kuang-ming Jih-pao, 13 Apr 63, p 2

A comprehensive investigation of the natural resources of T'ai Lake, the principal lake in Kiangsu Province, has just been completed. The investigation proves that the lake is rich in fish, water conservation, and botanical resources. The investigation work was organized by the Nanking Institute of Geography of the Chinese Academy of Sciences and has been going on for the past 5 years. Scientific workers of the Yangtze Institute of Aquatic Products, of the Institute of Hydrobiology of the Chinese Academy of Sciences, and of some higher educational institutions participated in this work.

According to the report of the scientific workers, T'ai Lake, which is one of the five largest lakes in China, has 64 species of fish, of which 31 are of great economic value. This lake contains more zoo-plankton than aquatic grasses and benthos. For this reason, there are many middle- and upper-level species of fish such as ice fish, mei (2734) coilia, bream, and tench. The meat of the ice fish and the coilia is tender and flavorful, and these two fishes account for more than one half the total amount of fish prepared for market. They have become a speciality of this place. The next fish in order are the aquatic grass eaters and omnivorous fish which include the Chinese ide, flat fish, and crucian, as well as certain small fish. Finally, there are quite a few kinds of carnivorous fish.

The investigation also states that the lake is abundant in fish food. A kiloliter of water contains 400 million phyto-plankton and 3,500 zoo-plankton. The moxa and bulrushes on the lake banks also provide food for fish. Further reasonable utilization of these resources will permit economic fish to multiply on a large scale.

The scientists believe that to protect the lake resources, it is important to halt fishing operations during the breeding season and to use nets with large mesh to allow the fingerlings and one-year-old fish to escape. They learned that one-year-old white bream weight only 2-9 liang, whereas 3-year-olds weigh 5-8 chin and that one-year-old Chinese

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ide weigh about 3 liang, whereas 3-year-olds weigh 8 chin or more. Under these conditions, the scientists proposed that the administrative controls for T'ai Lake should be revised, and those proposals have already been adopted by production departments.

As with the 200 or more other lakes in Kiangsu Province, this lake plays a role in flood control, irrigation, aquatic product cultivation, and water transportation. The scientists discussed the possibility of utilizing and revising the various natural conditions of these lakes to serve agricultural production. The Lake Water Laboratory of the Nanking Institute of Geography has established an experimental station in I'hsing Hsien and is making hydrological and hydrochemical studies of the lake waters and experimenting with the use of chemicals to control surface evaporation. The scientists have established weather forecasting stations on some of the larger lakes which have busy transportation systems to protect transportation and ensure production.

Prof Shih Ch'eng-hsi (2457/2052/3556), director of the laboratory and prominent hydrologist, said that the comprehensive study of lakes did not begin in China until 1958. Kiangsu's comprehensive investigation of the natural resources of the principal lakes is furnishing experience for research throughout the country. This year, scientists will begin the comprehensive investigation of the natural resources and the study of rational utilization of other large fresh water lakes in China such as P'o-yang and Ch'ao lakes.

INSTITUTE OF HYDROBIOLOGY OBTAINS RESULTS IN THE CONTROL OF FISH FUNGUS --
Peiping, Kuang-ming Jih-pao, 13 Apr 63, p 2

The Institute of Hydrobiology of the Chinese Academy of Sciences reports that fish fungus, which spreads rapidly in winter and early spring, is now effectively controlled. Prof Hsi Ta-shu (0242/6671/2579), a fish disease expert at the institute, and other researchers, after repeated experiments, have determined that only fish that have been injured by nets or parasites are subject to aquatic fungus. Thus, the way to control this fish disease is to improve inspection methods when fish are being caught or transported or are in the process of spawning, to avoid mechanical injury and to create the best conditions for spawning. They placed injured or slightly sick fish in a solution of salt and sodium bicarbonate and, after a long period, washed them or applied a strong concentrate of potassium bichromate or malchite green, which controlled the growth of the fungus and caused the fish to regain health. They applied "1676--A" to fish spawn to prevent the development of aquatic fungus. Fish or spawn that are attacked by the fungus develop a cotton-like hypha on the surface of the body of the fish or the eggs. At this point the fish become weak and die, and very few of the eggs hatch. The fungus is prevalent in winter and early spring, especially among fish that have been transported long distances.

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Researchers began this work in the spring of 1960. They collected various kinds of fungus from many places, studied native and foreign reference materials, and then made hundreds of isolation cultures and performed related types of experiments. The results showed that uninjured healthy fish are in no way subject to the fungus. If a fish is injured, the injury becomes infected and gradually develops hypha. Prof Ni Ta-shu maintains that active cells can resist the fungus. The more active the body cells of fish and the embryonic cells of spawn, the better able they are to resist the fungus; on the contrary, the weaker the vitality, the faster the infection spreads. On the basis of these experiments, Professor Ni submits the view that aquatic fungus is saprophytic and not parasitic. Moreover, he has found ways to control it effectively.

TREATISE ON BIRD DISTRIBUTION PUBLISHED -- Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, p 71

A work entitled Chung-kuo Ching-chi Tung-wu Chih--Miao-lei (Chinese Animals of Economic Value--Birds), edited by Cheng Tso-hsin (6774/0155/2450), has been published by the Ko-hsueh Chu-pan She (Science Press). The work is divided into three sections, dealing with general and specific theory and bird records. A detailed description of the geographical distribution of 241 species birds of economic significance is included. This treatise of over 700,000 characters includes over 134 maps of distribution and other illustrations. Particularly notable is the careful differentiation of the distribution of subspecies within 60 individual species.

EARTH SCIENCES

STUDY ON GRANITE INTRUSIONS IN SOUTHEAST CHINA -- Peiping, Scientia Sinica, Vol 12, No 5, May 63, pp 709-722

Geologists still disagree on the presence of Caledonian granite in the southern part of Kiangsi Province, world-famed for its rich tungsten deposits. In their paper "Correlation of the Caledonian and Yen-shan Granites in Southern Kiangsi," the authors Chi Shou-yuang (1323/1108/0337), Wang Te-tzu (3769/1795/3320), and Hu Shou-hsi (5170/0649/1153) of Nanking University point out that, in 1957, Prof Hsu K'o-ch'ing first showed that the Lung-hui and Shan-yu granites in this region belong to the Caledonian period. In 1958, Yu Sou-jung also discovered granite massifs of this period in the Ch'un-i deposits. Many geologists hold that all the granite intrusions in this region relate to the Yen-shan period.

The authors of this paper, upon conducting investigations on magmatic activity in this area, are convinced that if the magmatic activity in the Caledonian period could be clarified, a number of debatable problems would be readily solved. In fact, they conclude their paper by further suggesting that the presence of intrusion from yet another period is quite possible.

From investigations conducted by geologists from the faculty at Nanking University, the authors divided the study area into three tectonic horizons: metamorphic formations of the pre-Devonian period, forming a folding base in the area where Caledonian granite crops out; Upper Paleozoic deposits, also including Lower Triassic; and Cretaceous and Paleogenic deposits. Their study centers on the following seven granite massifs: (1) Shan-yu, (2) Lung-hui, (3) Chi-lung-chai, (4) Ch'ien-ch'ai, (5) T'ieh-shan-lung, (6) Hsi-hua-shan, and (7) Ta-yu gneiss.

Section Four of this manuscript presents their geological proof of the presence of Caledonian granite in this area. Section Five correlates the petrographic data for granites of the two periods (Yen-shan and Caledonian), with emphasis that there is no marked difference as regards the main ore-forming minerals. They differ only in the content of accessory and secondary minerals: the Caledonian being rich in apatite, titanite, rutile, etc; the Yen-shan in garnet, fluorite, etc.

The authors use A. N. Zavaritskiy's method for charting petrochemical analyses of the Caledonian and Yen-shan granites. Tests for the semi-quantitative spectral analyses indicate that Yen-shan granite is rich in Li and contains Sr and Ba. The Caledonian granite is rich in Ba, poor in Sr, and does not contain Li. Results of the spectral analyses of biotite are tabulated in Table 3 (page 720). Results of microscope observations, correlating the mineralogical composition of the various granites, are set forth in Tables 1 and 2 (pages 716-717).

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CH'ANG-CH'UN GEOLOGICAL COLLEGE HOLDS CONFERENCE -- Peiping, Kuang-ming
Jih-pao, 22 Mar 63, p 2

At a reports conference convened recently by Ch'ang-ch'un Geological College, five young instructors read papers. These papers were written under the guidance of Prof Tung Shen-pao (5516/3947/0202), a specialist in metamorphic petrology.

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CHEMISTRY AND CHEMICAL TECHNOLOGY

RESEARCH ON EXTRACTION OF BERYLLIUM SURVEYED -- Peiping, Hua-hsueh T'ung-pao, No 12, Dec 62, pp 29-32

[The following are extracts from an article, "The Extraction and Separation of Beryllium," by Pai Kuang-pi (4101/1732). This article surveys foreign literature concerning research on the extraction and separation of beryllium; the lone Chinese citation in the bibliography is of a work entitled Hsi-yu Yuan-su K'uang-wu Hua-hsueh (The Chemistry of Rare Element Minerals), by Kuo Ch'eng-chi (6753/2110/1015), published in 1958 by the Science Press. The remaining 30 citations in the bibliography consist of 20 English language publications, 5 in Russian, 4 in Japanese, and one in Italian.]

In the the past few years, new uses for beryllium have been found in atomic energy and rocket technology. For this reason, great interest has been shown in the problem of analytical separation of beryllium. This paper presents a summary discussion of research on the methods of using solvents for the extraction and separation of beryllium.

[The next portion of the article consists of a summary of results reported in the literature using the following solvent systems: chelating systems (including beta-diketones, acetyl acetone, and thionyl trifluoroacetone) and ion association systems (including beryllium acetate, beryllium butyrate, and alkyl phosphate esters).]

Manifestly, beryllium is an element closely related to the rocks; silicon and aluminum are important associated element minerals. This is, for example, the situation in the most important beryllium mineral, beryl. (Reference is here made to the Chinese work by Kuo Ch'eng-chi cited in the bibliography).

Most of the radioactive elements mixed with the fission products and associated beryllium in the reactor pile are heavy metallic elements; at present, a solution to this problem is not yet evident in what has been published on extraction methods.

Ordinarily, of the two extraction systems discussed above, the ion association system is more highly selective than the chelate system and is thus suitable for large-scale extraction. Because of the effectiveness of the chelates, however, chelate systems show greater sensitivity; and so, as regards the separation of beryllium, in addition to the extensively used acetyl acetone, other combinations of chelate and ammonium hydroxide complexing agents show possible applications.

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Research on simplifying the process of separating micro- and macro-quantities of beryllium from other minerals is also important. The literature on separating macro-quantities of beryllium is still very limited. The results shown by fatty acids appear fairly good; further research is required. Macromolecular amines have been comparatively effective in the separation of many metals; it is possible that they may be effectively used in connection with beryllium.

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CHINESE INVESTIGATE RARE HYDROUS BORATE -- Peiping, Scientia Sinica,
Vol. 12, No 4, Apr 63, pp. 575-585

[The following is a full translation of the Russian-language article, "Study of Kurnakovite Crystals," written by Hsieh Hsien-to (6200/0341/1795) and Cheng Mien-p'ing (6774/4875/1627). Illustrations have been omitted. The reader is directed to the appropriate drawings in the original source. The manuscript was received for publication on 3 December 1962.]

Kurnakovite is related to a number of rarely occurring hydrous borates. M. N. Goldevskiy first described this mineral from the Inder deposits in Western Kazakhstan in the Soviet Union. According to his data, kurnakovite is probably monoclinic and has the formula $Mg_2B_2O_7 \cdot 13H_2O$. However, these data are not sufficiently accurate. Thus, the kurnakovite subsequently found in the western part of the US (cf sources 8, 7) for a long time was thought to be inderite, another but related hydrous magnesium borate, $(Mg_2B_2O_7 \cdot 15H_2O)$. These data were verified only after recent publication of the work by Schaller and Mrose (cf source 9), as well as information by Beil (cf source 5).

The crystallography and mineralogy of this mineral have had very limited study, since kurnakovite is a comparatively rare mineral and, particularly, well-formed crystals in foreign deposits are as yet unknown. The well-formed kurnakovite crystals which we recently discovered permit a detailed study and expanded knowledge of this mineral.

This paper presents the results of goniometric and X-ray study of kurnakovite, its physical properties, chemical composition, and thermal characteristics.

1. Deposits and Physical Properties

The kurnakovite crystals which we investigated were taken from one of the deposits of lake-origin borates, where ore bodies lie horizontally in the form of strata. These strata lie under carbonaceous and argillaceous rocks. Their upper parts are partially carbonated. Inderite, pinnoite, ulexite, and other hydrous borates occur in association with kurnakovite.

Kurnakovite is usually found as small grains of indefinite form. In isolated places, it is also found as well-formed crystals of thick-tabular form, measuring from 0.1-0.5 to 2.00 mm in length.

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Kurnakovite crystals are colorless and transparent. Hardness is about 3. Specific gravity determined by the pycnometric method is 1.847 ± 0.01 ; 1.84 by X-ray computation. Glassy luster. White streaks. Conchoidal fracture.

Under short-wave violet rays, kurnakovite crystals phosphoresce a faint light-green color. Test on the Gieb-Scheib apparatus indicates the absence of piezoelectric effect on kurnakovite crystals.

Under the microscope, the mineral is colorless. Average cleavage is observed along {111} and incomplete along {010}, with a 64-degree angle between them. Elongation is positive. Extinction oblique. Optically biaxial, negative; $2V = 80$ degrees (measured), $80^{\circ}28'$ (computed). Optical orientation: $N_g \wedge c = 14^{\circ}$, $N_m \wedge a = 41^{\circ}$, $N_p \wedge b = 47^{\circ}$.

Refraction indexes of kurnakovite are determined in an immersion apparatus by varying the wave length and tested in a yellow light.

$$N_g = 1.5245 \pm 0.001$$

$$N_m = 1.5100 \pm 0.001$$

$$N_p = 1.4908 \pm 0.001$$

$$N_{cp} = \frac{N_g + N_m + N_p}{3} = 1.5084$$

Refraction indexes of immersion liquids were tested in a refractometer. Birefringence = 0.034.

The average refraction index of kurnakovite, according to Gladstone and Dale formula $\left(\frac{N - 1}{d} = K\right)$, was computed to test the accuracy of our determination. It equals 1.5095. Difference between the measured and the computed values is only 0.0011. The refraction indexes as measured by us practically coincide with those which M. N. Goldevskiy (cf source 2) determined for the Inder kurnakovite ($N_g = 1.525 \pm 0.002$, $N_m = 1.510 \pm 0.002$, $N_p = 1.489 \pm 0.002$, $N_g - N_p = 0.036$).

2. Crystallography

1. Morphology

The kurnakovite crystals at our disposal appeared morphologically monotypic. They have a thick-tabular face. In the installation which we adopted, the crystals were elongated along [001] and swollen along [100]. The axis of [001] is the axis of the most developed zone.

C-O-N-F-I-D-E-N-T-I-A-L

A goniometric study of kurnakovite was made on a two-circle goniometer with a $\pm 1'$ accuracy in readings along the graduated circles. Dimensions of the measured crystals ranged from 0.6 to 1.5 mm along [001], 0.4 to 1 mm along [010], and 0.3 to 0.8 mm along [100]. The crystals were adjusted along the zone [001]. A total of nine simple forms were discovered in the kurnakovite crystals: [100], [001], [010], [110], [121], [011], [101], [111], and [201]. Results of the measurements of eight of the crystals are set forth in Table 1, which shows the forms discovered, the spherical coordinates, and the number of faces observed. Variations in the spherical coordinates are given in Table 1, as related to the small sizes of the crystals. Figure 3 shows the form of kurnakovite crystals.

Table 1. Goniometric Measurement of Kurnakovite
Triclinic Syngony, Pinacoidal Type of Symmetry

$$\begin{aligned} a:b:c &= 1, 3294:1:0,9514, \alpha = 135^\circ 41', \beta = 115^\circ 21', \gamma = 84^\circ 17' \\ p_0:q_0:r_0 &= 0, 5027:0,8640:1, \lambda = 41^\circ 34', \mu = 59^\circ 17', \nu = 70^\circ 53' \\ \rho'_1 &= 0,8385, q'_6 = 1,4411, x'_6 = 0,4735, y'_6 = 1,2482 \end{aligned}$$

Symbols of Faces	Spherical Coordinates		Variations in Measuring Spherical Coordinates		Number of Observed Faces
	φ	ρ	φ	ρ	
a 100	0°00'	90°	0°00'	90°	16
b 010	289°07'	90°	288°47' 289°21'	90°	16
c 001	309°41'	53°09'	308°52' 309°53'	53°03' 53°44'	16
m 110	74°51'	90°	74°44' 75°56'	90°	13
o 111	142°24'	29°24'	141°24' 143°13'	28°56' 29°27'	10
p 121	118°34'	63°08'	118°26' 118°43'	63°06' 63°34'	14
q 011	42°38'	27°24'	42°20' 42°39'	27°14' 27°42'	12
r 101	271°03'	45°59'	270°53' 271°36'	45°57' 46°07'	12
s 201	232°17'	52°30'	230°08' 232°28'	52°04' 52°57'	6

C-O-N-F-I-D-E-N-T-I-A-L

On the basis of the goniometric study of kurnakovite, the external form of its crystals is triclinic. The presence of only pinacoids and the absence of a piezoelectric effect in the kurnakovite crystals permit assuming the presence of a center of symmetry. Consequently, kurnakovite may relate to the pinacoidal form of symmetry of triclinic symmetry 1.

Most characteristic forms are [100], [001], and [010]. The faces of [110], [121], and [111] occur often, but are relatively small in size. Faces of the forms [011], [101], and [201] usually take the form of narrow bands. All the faces of the crystals are smooth. No striations observed. Twinning occurs quite frequently. The twinning plane is apparently [001]. (Figure 4).

2. X-Ray Investigation

Parameters of the unit cell were determined by X-ray rotation along [100], [010], and [001] (Figure 5) and the Weissenberg method along [001] and [010] in a chamber with a 57.3 mm-diameter ϕ the cylindrical adapter on unfiltered copper of radiation ($\lambda_{\text{K}\alpha}$ 1.5418 Å). Photographic conditions: voltage, 35 kv; current intensity, 18 ma; and exposure time, from 2 to 4.5 hours. Size of the investigated crystals about 0.4 mm. Parameters of the unit cell which we computed have the following values:

$$a_0 = 11,66 \pm 0,02 \text{ \AA}$$

$$b_0 = 8,78 \pm 0,03 \text{ \AA}$$

$$c_0 = 8,36 \pm 0,01 \text{ \AA}$$

$$a_0 : b_0 : c_0 = 1,3280 : 1 : 0,9522$$

$$\alpha = 135^\circ 58', \beta = 115^\circ 25', \gamma = 84^\circ 18',$$

$$V = 505,61 \text{ \AA}^3.$$

C-O-N-F-I-D-E-N-T-I-A-L

The unit cell of kurnakovite contains $\text{Mg}_3\text{B}_3\text{O}_{11} \cdot 15\text{H}_2\text{O}$.

The results of the X-ray investigation of our kurnakovite specimen do not coincide with the data obtained by Heinrich (1946) for American kurnakovite (cf Table 2). This discrepancy is explained by the different selection of axial coordinates and, evidently, the inaccuracy of Heinrich's calculations for all the constants on the lattice with only one crystal assembly. The kurnakovite investigated by Heinrich is not a well-defined crystal, and its cleavage is split. Heinrich selected the line intersecting the two cleavages for the axis of rotation (c-axis). This adjustment, as our observations indicate, does not coincide with the actual c-axis of kurnakovite.

Table 2

Parameters of the Unit Cell of Kurnakovite

<u>Characteristics of the Unit Cell</u>	<u>Author's Data</u>	<u>Heinrich's Data</u>
Syngony	Triclinic	Triclinic
Z	1	1
a_0	11,66 Å	8,14 Å
b_0	8,78	10,47
c_0	8,36	6,33
α	135°58'	96°56'
β	115°25'	106°28'
γ	84°18'	106°03'
$a_0 : b_0 : c_0$	1,3280 : 1 : 0,9522	0,768 : 1 : 0,604
Volume	505,61 Å ³	485,43 Å ³

X-ray investigation shows triclinic syngony, which is in agreement with the results of the goniometric study. The pinacoidal form of symmetry with only a single space group $\text{P}\bar{1}-C_1^*$ is identically calculated in agreement with morphological data and absence of the piezoelectric effect.

C-O-N-F-I-D-E-N-T-I-A-L

The crystal structure of kurnakovite has not yet been clarified. C. L. Christ (cf Source 6) assumes, on the basis of his study of the crystal structure of inyoite ($\text{Ca}_2 \text{B}_2 \text{O}_{11} \cdot 13 \text{H}_2\text{O}$) and meyerhofferite ($\text{Ca}_2 \text{B}_2 \text{O}_{11} \cdot 9\text{H}_2\text{O}$), the presence of a trinuclear boroxxygenous anion $[\text{B}_3\text{O}_8(\text{OH})_3]^-$ representing a ring of two B-tetrahedra and one B-triangle, having common O-vertices, in the structure of kurnakovite and inderite. The crystalline structure of inderite, as recently developed by Ashirov, Rumanov, and Belov (cf source 1 -- they studied the American "lesserrite," but "lesserrite" is identical to inderite -- cf source 9), shows full agreement with Christ's assumption.

In considering that kurnakovite and inderite have identical chemical composition and close physical, optical, and thermal properties, we consider fully possible the presence of the boroxxygenous anion $[\text{B}_3\text{O}_8(\text{OH})_3]^-$ in the structure of kurnakovite of a similar structure of inderite.

Powder X-ray analysis of kurnakovite was made in a chamber with a 57.3 mm diameter of the cylindrical adapter on unfiltered iron with radiation ($\lambda_{\text{kd}} = 1.9373 \text{ \AA}$). Photographic specifications: voltage, 25 kv; current intensity, 8 ma; exposure time, 20 hours. Diameter of the column of the model, 0.3 mm. Intensivity was calculated on a 10-grade scale.

Table 3 sets forth the interstitial spacing and intensivity of our kurnakovite. This table uses Heinrich's data for comparison. Our results coincide with those of Heinrich.

Author's Data			Heinrich's Data	Authors' Data			Heinrich's Data				
I	d _{HMM.}	d _{HMY.}	hkl	I	d	I	d _{HMM.}	d _{HMY.}	hkl	I	d
10	7, 12	7, 219	11I	9	7, 314	3	2, 534	{ 2, 536	120	3	2, 543
8	5, 80	{ 5, 793	10I	5	5, 955	6	2, 477	{ 2, 531	051	6	2, 475
		{ 5, 732	010			3	2, 380	2, 482	002	3	2, 398
10	4, 94	{ 4, 964	001	10	5, 000	4	2, 290			3	2, 380
		{ 4, 945	200			2	2, 200				
3	4, 19	4, 199	0Z1	3	4, 235	3	2, 139				
4	3, 94	{ 3, 947	110	4	3, 965	3	2, 096			2	2, 095
		{ 3, 940	1Z1			4	1, 965			4	1, 963
1	3, 72	{ 3, 732	101							1	1, 927
		{ 3, 704	0Z2			1	1, 872			2	1, 872
1	3, 58	3, 575	20Z			1	1, 832			1	1, 826
7	3, 48	3, 480	31I	7	3, 482	2	1, 780			2	1, 782
2	3, 34	{ 3, 386	0I2	1	3, 388	2	1, 745			3	1, 739
		{ 3, 297	300			1	1, 704				
2	3, 15	{ 3, 178	Z11	2	3, 177	1	1, 668			1	1, 662
		{ 3, 143	I11			3	1, 635			1	1, 636
2	3, 034	3, 036	I20	2	3, 055	2	1, 588			1	1, 596
		{ 2, 866	020							3	1, 577
8	2, 858	{ 2, 845	201	7	2, 866	1	1, 534			2	1, 538
		{ 2, 842	011			1	1, 500			1	1, 504
2	2, 763	2, 768	I02							1	1, 473
4	2, 670	2, 644	3Z0	3	2, 696	1	1, 421			2	1, 421
				1	2, 602						

Figure 1. The effect of the concentration of the inhibitor on the rate of polymerization of α -methylstyrene in the presence of SnCl_4 at 25°C .

C-O-N-F-I-D-E-N-T-I-A-L

3. Chemical Composition

Kurnakovite is not soluble in hot water and in cold acids. It is slightly soluble in warm HCl and HNO₃ (1:1).

Before the blowpipe, a grain of kurnakovite first becomes white, then fuses to an opaque white bead, coloring the flame a bright green. In the closed tube, it swells and gives off large amounts of water. With quinalizarin, kurnakovite emits a characteristic blue color.

Prior to chemical analysis, the kurnakovite was subjected to spectral analysis, results of which are set forth in Table 4.

Table 4: Data on Spectral Analysis of Kurnakovite

Mg	much
B	much
Ca	0,3
Si	0,05 0,1
Al	0,01 0,03
Ba	0,01
Sr	0,003
Cu	<0,001

Analyst: Huang Ting-k'un

For chemical analysis, the mineral was placed under a binocular microscope. The batch weighed 3 grams. Chemical analysis was made by chemical analyst Ch'ing Ta-chang. Table 5 shows the results of the chemical analysis made on our specimen and on the kurnakovite from the Inder Basin and from western United States.

C-O-N-F-I-D-E-N-T-I-A-L

Table 5: Chemical Composition of Kurnakovite

Components	Author's Data	Goldev- skiy's Data	Heinrich Data	Data by Frondel and Morgan		Theoretical Composition
				I	II	
MgO	14,47	15,46	14,70	14,43	14,42	14,41
CaO	0,18	0,16	0,32			
Fe ₂ O ₃	0,02	0,20				
Al ₂ O ₃	0,01					
B ₂ O ₃	36,69	37,58	36,41	36,89	27,31	37,32
SiO ₂	0,05	0,10				
Ni ₂ O	0,03					
CO ₂	0,15					
F		0,14				
H ₂ O	48,24	47,09	48,12	48,69	48,12	48,27
Hepactb. oct.		0,20	0,54			
Total	99,84	100,87	100,09	100,01	100,07	100,00
Analysts:	Ch'ing Ta-chang	Yegorova	-	Morgan		

C-O-N-F-I-D-E-N-T-I-A-L

Interpreting the chemical analysis data for our kurnakovite specimen, we obtain $2\text{MgO} \cdot 3\text{B}_2\text{O}_3 \cdot 15\text{H}_2\text{O}$, which agrees with the data of the American mineralogists.

4. Thermal Analysis

The thermal characteristics of kurnakovite were first obtained by Kh. S. Nikogosyan (cf sources 3 and 4) in the Laboratory of High Temperatures at the All-Union Geological Scientific-Research Institute. The thermal curve which he established shows only an endothermic effect in the temperature interval $81^\circ - 105^\circ$. Exothermic reactions, characteristic of hydrous borates, are missing. On this basis, Gold-evskiy considered that kurnakovite is related to ascharite and to a few borates which do not have the exothermic effect, which Nikolayev calls "the borate interval."

For detailed study of the thermal characteristics of kurnakovite, we conducted tests through thermogravimetric analysis and thermal differential analysis, as well as observations under a high-temperature thermal microscope.

The experiments for dehydration (Figure 6) show that kurnakovite begins to give off water at a temperature of 84° . Its main mass ends this process at 340° . The one remaining molecule of water is gradually given off at much higher temperatures.

The following picture was observed under the high-temperature thermal microscope: size of the mineral was reduced twice in the temperature intervals of $120-300^\circ$ and $620-680^\circ$ and increased somewhat in the $700-730^\circ$ degree interval. The mineral had already begun to melt at the 940° degree temperature.

The thermal curve for kurnakovite is shown in Figure 7. It differs from Nikogosyan's. A second endothermic effect in the $937-1027^\circ$ degree interval and a single exothermic effect in the $713-770^\circ$ degree range were also observed, in addition to the endothermic effect in the $108-185^\circ$ degree range, in the thermal curve for our specimen.

The first large endothermic effect which we registered, as shown by the dehydration experiments, corresponds to the loss of a large amount of water. The exothermic reaction in the $713-730^\circ$ degree range is inherent to almost all the borates and is included in the crystallization of the substance which has become amorphous through decomposition. As regards the origin of the second endothermic effect, according to data of observations under the high-temperature thermal microscope, it is safe to say that it corresponds to the melting of the recrystallized substance.

C-O-N-F-I-D-E-N-T-I-A-L

From the above statements, it is easy to see that the behavior of kurnakovite during heating does not differ at all from the general behavior of a majority of hydrous borates. Consequently, Goldevskiy's assumption on the kinship of kurnakovite to ascharite is not sufficiently substantiated.

In comparing the dehydration and thermal curves for our specimen with the corresponding curves for inderite, as obtained by us (Figure 8), Feodot'yev, (Source 4), and Nikolayev (Source 3), we are convinced that kurnakovite is very similar to inderite in its thermal properties. This similarity is explained by the identical chemical composition, similar crystalline structure, and close physical properties of the two minerals.

In conclusion, we offer sincere acknowledgements to Kuo Chung-chan for reviewing the manuscript; to Chou Ching-lien, Ying Shu-sheng, and Ku Shung-fei for assistance rendered in the completion of this paper; and to Ch'ing-Ta-chang and Liu Lei-pao for doing the chemical and thermal analyses.

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NEW REAGENT FOR DETERMINATION OF ZIRCONIUM -- Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 59-60

[The following is an abstract of an article, "Analytical Application of m-Nitro-beta-Phenylacrylic Acid (II) New Reagent for the Quantitative Determination of Zirconium," by Chang Kang (1728/0342) and Liu Te-ho (0491/1795/0735), both of the Chemistry Department, Lanchow University. The authors acknowledge the assistance of Huang Tien-ch'un Research Section, Lanchow University.]

In this paper, the authors used m-nitro-beta-phenylacrylic acid as a reagent in the quantitative determination of zirconium. The effects of the pH of the solution upon the determination of zirconium are reported as is the range in which the zirconium determination took place. Experiments were also carried out on the effects of interfering elements.

The results revealed that when the pH was 1.4, definite quantities of zirconium could be precipitated; trivalent rare-earth elements could not. This reagent can therefore be used to determine zirconium found in combination with trivalent rare-earth elements.

COMPLEX TITRATION OF ZIRCONIUM DESCRIBED -- Peiping, Hua-hsueh T'ung-pao, No 12, Dec 62, pp 49-50

[The following is an abstract of an article, "Complex Titration of Zirconium in Zirconium-Iron and Zirconium Ores," by Ch'en Ch'ing (7115/3237) and Lao Kuang-ch'i (0525/0342/0796).]

This paper provides an introduction to the methods of determining zirconium in zirconium-iron, metallic zirconium, zirconium oxide, and zirconium-quartz. In the method of titrating zirconium described in this paper, hafnium is also titrated simultaneously. The authors found that the most convenient method for the quantitative determination of zirconium is direct titration of the zirconium oxide in a 1-2 N acid solution produced by the use of ethylene diamine disodium tetraacetate. Using this method of titrating zirconium generally requires 30-60 minutes to produce definite results, therefore, it fully satisfies the requirements of productive units in so far as speed is concerned.

C-O-N-F-I-D-E-N-T-I-A-L

PAPER CHROMATOGRAPHY SEPARATION OF LANTHANIDES -- Peiping, Hua-hsueh Hsueh-pao, Vol 28, No 3, Jun 62, pp 148-154

[The following is an abstract of an article, "Paper Chromatographic Separation of Lanthanides, Scandium, and Thorium," by P'ang Shu-wei (1690.0647/5633) and Liang Shu-ch'uan (2733/2885/2938), both of the Institute of Chemistry, Chinese Academy of Sciences. According to a footnote, this paper was received for publication in November 1961.]

This paper reports improvements in the use of methyl acetate as a developer and the use of tetrahydrofuran as developer to obtain the single and coexistent values of flow ratios for the lanthanides, scandium, thorium, zirconium, titanium, and vanadium. The relationship of these values to the temperature is also reported. In addition, it was proved that the limiting proportion of thorium to rare-earth elements was 1:1000 and the limiting proportion of scandium to rare-earth elements was 1:10,000, when these are chromatographically separated using tetrahydrofuran and alazirin in identification. (FOR OFFICIAL USE ONLY)

INFRARED SPECTRA OF CIS-TRANS FORMS OF A POLYESTER RECORDED -- Peiping, Hua-hsueh Hsueh-pao, Vol 28, Noe 3, Jun 62, pp 181-186

[The following is an abstract of an article, "Infrared spectroscopic Studies on the Cis-Trans Isomerization of the Polyester from Maleic and Anhydride-Ethylene Glycol," by Chang Te-ho (1728/1795/7901), Ch'in Wen-mao (4440/2429/2021), and Ch'ien Jen-yuan (6929/0086/0337), all of the Institute of Chemistry, Chinese Academy of Sciences. According to a note, this paper was received for publication in November 1961.]

The characteristic infrared absorption bands for the cis- and trans-forms of the polyester from maleic and anhydride-ethylene glycol were identified by comparison with the absorption bands of the corresponding model compounds, diethyl maleate and diethyl fumarate. Cis-form: 825, 1410, and 3052 [cycles] per centimeter; trans-form: 780, 1371, and 3072 [cycles] per centimeter. The ratio of the optical densities of the 825 and 780 [cycles] per centimeter bands was chosen for the determination of the ratio of cis- and trans-forms present in the polyester.

Decreased temperature and duration of polyesterification increased the trans-content of the polyester obtained. The cis-trans isomerization reaction was shown to be a first order reaction with an activation energy of 19 kilocalories per mole. The large increase of viscosity of the fraction mixture during polyesterification of maleic and anhydride-ethylene glycol was primarily due to the increase of trans-content of the polyester formed. (FOR OFFICIAL USE ONLY)

C-O-N-F-I-D-E-N-T-I-A-L

PAPER CHROMATOGRAPHY SEPARATION OF LANTHANIDES -- Peiping, Hua-hsueh Hsueh-pao, Vol 28, No 3, Jun 62, pp 148-154

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This paper reports improvements in the use of methyl acetate as a developer and the use of tetrahydrofuran as developer to obtain the single and coexistent values of flow ratios for the lanthanides, scandium, thorium, zirconium, titanium, and vanadium. The relationship of these values to the temperature is also reported. In addition, it was proved that the limiting proportion of thorium to rare-earth elements was 1:1000 and the limiting proportion of scandium to rare-earth elements was 1:10,000, when these are chromatographically separated using tetrahydrofuran and alazirin in identification.
(FOR OFFICIAL USE ONLY)

RESEARCH CONDUCTED ON POLYMER CRACKING -- Peiping, Hua-hsueh T'ung-pao, No 12, Dec 62, p 48

[The following is an abstract of an article, ["The Use of Thermoelectric Analysis in the Study of Poly Methyl Methyl Acrylate Cracking," by Wu Shih-k'ang (0702/0013/1660), Chang Hsien (1728/6343), and Ti Wen-hui (5049/2429/1979). The authors acknowledge the assistance of Kang Jui-ho (0073/3843/0735) in the preparation of the samples and Ch'ien Jen-yuan (6929/0086/0037) for valuable suggestions.]

This paper reports the use of the thermoelectric analysis method in the study of samples of poly-methyl methyl acrylate (PMMA) produced by using benzoyl peroxide. In the experiment, quartz sands were used as test material; NiZr-NiAl was used for the thermoelectric system; the rate of temperature increase in the retort was 8-10 degrees per minute; each of the samples weighed 0.2 grams; the temperature range was 20-450 degrees.

The authors' work represents a step forward in verifying the existence of two mechanisms of PMMA cracking, in that two peaks were observed, one near 280 degrees and one near 360 degrees.

C-O-N-F-I-D-E-N-T-I-A-L

POLYMERIZATION OF BUTANDIONE STUDIED -- Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 51-53

[The following is an abstract of an article, "The Condensation Polymerization of Butandione," by Li Chihfen (2621/1013/5358), Liu Chen (0491/6878), T'ang Ming-tao (0781/2454/6670), and Liu T'ung-ming (0491/0681/2494). This paper was presented to the November 1962 Fourth National Conference on High Polymer Techniques.]

This paper describes primary research results in synthesizing polymers with specific electromagnetic properties from butandione. The condensation polymerization of butandione was carried out in a sealed glass tube using zinc chloride as a catalyst. A yield of 45 percent was obtained at 250 degrees centigrade when the molar ratio of butandione to zinc chloride was 0.5.

After the preparation of various condensation polymers of butandione, studies were made of their infrared absorption spectra, paramagnetic resonance spectra, and a plot was made of the resistivity versus temperature.

The result of the experiments clearly showed that macromolecular compounds with conjugate structures formed from butandione possessed paramagnetic and semiconducting properties.

BUTANDIONE POLYMERIZED WITH PHENYLENE DIAMINE -- Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 53-54

[The following is an abstract of an article, "The Condensation Polymerization of Butandione with Phenylene Diamine or Diphenylene Diamine," by Lin Yu-ch'en (0407/5148/1368), Chang Shu-san (1728/2885/5400), Shou Han-sen (1108/3211/2773), and T'ang Ming-tao (0781/2494/6670). This paper was read before the November 1962 Fourth National Conference on High Polymer Techniques. The authors expressed their appreciation to Liu T'ung-ming (0491/0681/2494) and Hsu Li-wen (1776/7787/7186).]

The authors described in this paper the condensation polymerization reactions between two aromatic amines and butandione, selected with a view to the study of conjugate macromolecules in which benzene rings or nitrogen atoms form the principal bonds. Equimolar amounts of the phenylene diamine and diphenylene diamine were combined with the butandione in an ethyl alcohol solution for 4 hours.

C-O-N-F-I-D-E-N-T-I-A-L

Afterwards, the infrared absorption spectra of the products were measured, as were the paramagnetic resonance spectra. The resistivity of the compounds were plotted against temperature. The results of the experiments demonstrated that the condensation polymers produced had conjugate structures and evinced paramagnetic and semiconducting properties.

PROBLEM OF ALKALI AND INERT MATTER REACTION IN CONCRETE -- Peiping, Kuang-ming Jih-pao, 10 Apr 63, p 1

The reaction developed by active silicon dioxide with alkalies and inert matter in concrete causes expansion and cracks in concrete construction. This problem, which has attracted the attention of China's engineers and scientists, was discussed recently at a conference convened by the Yangtze River Institute of Hydraulic Engineering and Hydroelectric Power and the Hupeh Hydraulic Engineering Society.

In discussing the mechanism of expansion reaction, everyone attending the conference agreed that the reaction developed by active silicon dioxide with alkalies and inert matter in the wet mixture of concrete formed alkalies -- a silicon complex, which absorbs water and expands. If this reaction continues after losing plasticity in the cement and if the induced expansion change exceeds that of the limits of the cement, then the concrete must crack. In discussing the power of induced expansion, some maintained that it is principally caused by the absorption of water; others, by swelling in the early period and by osmotic pressure in later periods. Concerning a restricting material, everyone maintained that not less than 25-30 percent volcanic ash should be added to produce a restriction. They agreed that there are many factors which affect expansion reaction, experiments having proved that the uniformity of activity of inert matter and the grain size and numbers of inert matter, as well as its distribution, affect expansion. Simply to use cement low in alkalies is not effective under all circumstances. The circumstances should determine the cement's "safe alkali content." Others proposed the "alkalinity equilibrium hypothesis" to explain the mechanism of alkalies and inert matter reaction and the restrictive mechanism of volcanic ash and other additives.

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MATHEMATICAL AND PHYSICAL SCIENCES
Mathematics

STUDY ON RADICAL QUADRATIC FORMS — Feiping, Scientia Sinica, Vol 12, No 5,
May 63, pp 737 - 738

[The following is a full translation of the Russian-language article,
"On the Mean Value of the k-th Degree of a Number of Classes For an
Imaginary Quadratic Field," written by P'an Ch'eng-tung (3382/2110/3159)
of Shantung University. The manuscript was received for publication
on 17 January 1963.]

1.

Let $h(-d)$ denote the number of classes of purely radical quadratic
forms of the negative determinant $-d$; $d \geq 1$ is an integer. In sources
1, 2, and 3, it was proved that

$$\begin{aligned} \sum_{d \leq N} h(-d) &= \frac{4\pi N^{\frac{1}{2}}}{21 \sum_{n=1}^{\infty} \frac{1}{n^3}} - \\ &\quad - \frac{2}{\pi^{\frac{1}{2}}} N + O(N^{\frac{1}{2}+\epsilon}), \\ \sum_{d \leq N} h^2(-d) &= \frac{2}{\pi^{\frac{1}{2}}} \sum_{\substack{n=1 \\ n \equiv 1 \pmod{2}}}^{\infty} \frac{\varphi(n) \chi(n^2)}{n^3} N^{\frac{1}{2}} + \\ &\quad + O(N^{\frac{1}{2}+\epsilon}), \\ \sum_{d \leq N} h^3(-d) &= \frac{16}{5\pi^{\frac{1}{2}}} \sum_{\substack{n=1 \\ n \equiv 1 \pmod{2}}}^{\infty} \frac{\varphi(n) \chi_3(n^3)}{n^3} N^{\frac{1}{2}} + \\ &\quad + O(N^{\frac{1}{2}+\epsilon}), \\ \sum_{d \leq N} h^k(-d) &= \frac{2^{k+1}}{(k+2)\pi^{\frac{1}{2}}} \times \\ &\quad \times \sum_{\substack{n=1 \\ n \equiv 1 \pmod{2}}}^{\infty} \frac{\varphi(n) \chi_k(n^k)}{n^3} N^{\frac{k+1}{2}} + \\ &\quad + O(N^{\frac{k+1}{2} - \frac{1}{4} - \epsilon}). \end{aligned}$$

where $\epsilon > 0$ is any fixed number; k is a positive integer. In this paper, we
shall establish the asymptotic relationship

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$$\sum_{d \leq N} \chi(-d) = \frac{2\pi N}{(k+2)N^2} \times$$

$$\times \sum_{\substack{n=1 \\ n \equiv 1 \pmod{N}}}^N \frac{\varphi(n) \tau_k(n)}{n^2} N^{\frac{k+1}{2}} +$$

$$+ O(N^{\frac{k+1}{2}}).$$

We shall require the following designations:

$\left(\frac{-d}{n}\right)$ is the Kroneker symbol; $L(s, \chi_f) = \sum_{n=1}^{\infty} \left(\frac{-d}{n}\right) n^{-s}$

$\varepsilon > 0$ is any fixed number;

k is any integer under the condition $1 \leq k \leq 5$;

$\varphi(n)$ is the Euler function;

$\tau_k(n)$ is the number of solutions for the equation $x_1 x_2 \dots x_k = n$ in positive integers.

2.

Lemma 1.

$$\sum_{d \leq N} L(1, \chi_f) = \sum_{\substack{n=1 \\ n \equiv 1 \pmod{N}}}^N \frac{\varphi(n) \tau_k(n)}{n^2} N -$$

$$- \frac{1}{2\pi i} \sum_{d \leq N} \int_{\gamma-i\infty}^{\gamma+i\infty} \Gamma(s-1) L(s, \chi_f) P^{s-1} ds +$$

$$+ O(P^{1+\varepsilon}) + O(NP^{-1-\varepsilon}),$$

where γ, P are any numbers under the condition $0 < \gamma < 1, P > 1$.

Proof (cf Source 1).

Lemma 2. (Yu. V. Linnik) Let $|t| \leq D_1^{\varepsilon_1}, D_1 = \frac{D_2}{(\log D_2)^{\varepsilon_2}}$

Then $\sum_{D_1 \leq d \leq D_1 + D_2} \sum_{\chi_d} \left| L\left(\frac{1}{2} + it, \chi_d\right) \right|^2 =$

$$= O(D_1 D_2 (|t| + 1)^{\varepsilon} \exp(\log^{\varepsilon} D)).$$

where $\varepsilon_1 > 0$ is a constant; $\varepsilon_2 > 0$ is an arbitrarily small constant.

Lemma 3. Let $|t| \leq \log^{\varepsilon} A$

Then $\sum_{A < d \leq 2A} \left| L\left(\frac{1}{2} + it, \chi_d\right) \right|^2 = O(A^{\varepsilon_1}).$

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This lemma may be deduced from Lemma 2.

Lemma 4.
$$\sum_{d \leq N} \int_{\frac{1}{2}-i\infty}^{\frac{1}{2}+i\infty} \Gamma(s-1) L(s, \chi_f) p^{s-1} ds =$$

$$= O(p^{-\frac{1}{2}} N^{\frac{1}{2}+\epsilon}).$$

Proof:

$$\begin{aligned} \sum_{d \leq N} \int_{\frac{1}{2}-i\infty}^{\frac{1}{2}+i\infty} \Gamma(s-1) L(s, \chi_f) p^{s-1} ds &= \\ &= O(p^{-\frac{1}{2}} \sum_{d \leq N} \int_{-\infty}^{\infty} e^{-|t|} \left| L\left(\frac{1}{2}+it, \chi_f\right) \right| dt) = \\ &= O(p^{-\frac{1}{2}} \sum_{d \leq N} \int_{-\log^2 d}^{\log^2 d} e^{-|t|} \left| L\left(\frac{1}{2}+it, \chi_f\right) \right| dt) + O(p^{-\frac{1}{2}}) = \\ &= R + O(p^{-\frac{1}{2}}), \end{aligned}$$

where

$$\begin{aligned} R &= O(p^{-\frac{1}{2}} \sum_{d \leq N} \int_{-\log^2 d}^{\log^2 d} e^{-|t|} \times \\ &\times \left| L\left(\frac{1}{2}+it, \chi_f\right) \right| dt). \end{aligned}$$

From Lemma 3, we obtain

$$\begin{aligned} R &= O(p^{-\frac{1}{2}} \sum_{\substack{a \leq \frac{\log N}{\log 2} \\ a \leq d \leq a+1}} \sum_{\substack{a \leq d \leq a+1}} \int_{-\log^2 d}^{\log^2 d} e^{-|t|} \times \\ &\times \left| L\left(\frac{1}{2}+it, \chi_f\right) \right| dt) = \\ &= O(p^{-\frac{1}{2}} \sum_{\substack{a \leq \frac{\log N}{\log 2} \\ a \leq d \leq a+1}} \int_{-(a+1)^2}^{(a+1)^2} e^{-|t|} \times \\ &\times \sum_{\substack{a \leq d \leq a+1}} \left| L\left(\frac{1}{2}+it, \chi_f\right) \right| dt) = \\ &= O(p^{-\frac{1}{2}} N^{\epsilon} \sum_{\substack{a \leq \frac{\log N}{\log 2} \\ a \leq d \leq a+1}} 2^{\frac{(a+1)^2}{2}}) = \\ &= O(p^{-\frac{1}{2}} N^{\frac{1}{2}+\epsilon}). \end{aligned}$$

The lemma is proved.

Theorem.

$$\begin{aligned} \sum_{d \leq N} h^k(-d) &= \frac{2^{k+1}}{(k+2)\pi^k} \times \\ &\times \sum_{\substack{n=1 \\ n \equiv 1 \pmod{2}}}^{\infty} \frac{\varphi(n) \tau_k(n)}{n^k} N^{\frac{k+1}{2}} + \\ &+ O(N^{\frac{k+1}{2}+\epsilon}). \end{aligned}$$

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Proof. By virtue of Lemmas 1 and 4, taking $\gamma = \frac{1}{2}$, we obtain

$$\begin{aligned} \sum_{n \leq N} L(1, x_f) &= \\ &= \sum_{\substack{n=1 \\ n \equiv 1 \pmod{2}}}^N \frac{\varphi(n) r_2(n)}{n^2} N + O(N^{\frac{1}{2}}) \\ &+ O(p^{\frac{1}{2}}) + O(p^{-\frac{1}{2}} N^{\frac{1}{2} + \epsilon}). \end{aligned}$$

Selecting $p = N^{\frac{1}{2} + \epsilon}$, we obtain

$$\begin{aligned} \sum_{n \leq N} L(1, x_f) &= \\ &= \sum_{\substack{n=1 \\ n \equiv 1 \pmod{2}}}^N \frac{\varphi(n) r_2(n)}{n^2} N + \\ &+ O(N^{\frac{1}{2} + \epsilon}). \end{aligned}$$

By using the Gauss formula

$$h(-d) = \frac{2}{\pi} \sqrt{d} L(1, x_f)$$

and applying Abel's summation, we shall complete the proof of the theorem.

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Nuclear Physics

NON-ISOCRONOUS PHENOMENON OF CYCLOTRON STUDIED -- Peiping, Wu-li
Hsueh-pao, Vol 18, No 12, Dec 62, pp 670-682

[The following is an abstract appearing in an article,
"Nonisochronous Phenomena in the Isochronous Cyclotron,"
by Fang Shou-hsien (2455/1343/6343) and Wei K'ai-yu (7614/
7030/3558). According to a footnote, this paper was
received for publication in November 1962.]

This paper describes the study of the effects of free oscillation upon particles' coil frequency in isochronous cyclotrons. The dependent relationship of the particle coil frequency upon the free isolation amplitude is obtained. An analysis of the results of the electron counter clearly shows that this nonisochronous phenomenon is induced by the mean magnetic field reaction of radical elongation; moreover, the influence of the periodic variation in magnetic field can be disregarded. In this paper it is also pointed out, that, because of the existence of this effect, the minimum acceleration voltage between the dees must be increased.

RESEARCH ON RADIUM GAMMA-RADIATION DOSIMETRY -- Peiping, Wu-li
Hsueh-pao, No 10, Oct 62, pp 527-739

[The following is an abstract appearing in an article,
"Cavity Chamber Dosimetry of Radium Gamma-Rays," by
Hu Jen-yu (5170/0088/1342). The author acknowledges
the direction of Tai Chuan-ts'eng (2071/0278/2582) and Li
Te-p'ing (2621/1795/1627). The work reported in this
paper was done in 1954, a first draft was prepared in that
year; the revised draft was completed in February 1962 and sub-
mitted for publication during May 1962.]

The work reported in this paper consists of an examination of various properties of cavity chambers of differing volumes and differing wall materials, such as graphite, bakelite, and aluminum. These chambers were used to measure the gamma-radiation emitted by one milligram of radium, without platinum packing, one centimeter from the source. The dosage, corrected for the polarization of the chamber walls, was 8.74 ± 0.27 roentgens per hour. Using Laurence's correction factor for differing thicknesses of platinum, the value becomes 8.15 ± 0.27 roentgens per hour with the source in 0.5 millimeters of platinum. These results are in good agreement with previous works, within the range of experimental error.

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INJECTION OF HIGH ENERGY PARTICLES IN A MAGNETIC MIRROR SYSTEM
STUDIED -- Peiping, Wu-li Hsueh-pao, Vol 18, No 11, Nov 62, pp 586-593

[The following is an abstract appearing in an article,
"Injection and Accumulation of High Energy Particles in a
Magnetic Mirror System," by Li Cheng-wu (2621/2973/2976).
The article was received for publication during June 1962.]

A method to inject beams of H_2^+ and H^+ simultaneously into a magnetic mirror system is proposed in this paper. From an analysis of the flow of the neutral residual gas in the system, the basic equation for the rate of proton accumulation and the conditions for the exponential increase of the proton density are obtained. Parametric analysis of the operation of the system reveals that high magnetic fields are advantageous in the study of particle accumulation when the energy range is 10,000-100,000 electron volts. But, as to the selection of optimal energies, the situation is more complex than the mere choice of low values suggested by Post et al; the purpose of the experiment must be the determining factor, under several conditions the higher energies have their advantages.

NUCLEAR MODELS IN STRONGLY DEFORMED REGION -- Peiping, Wu-li Hsueh-pao, Vol 18, No 11, Nov 62, pp 605-608

[The following is an abstract of an article, "Two Nuclear Models in the Strongly Deformed Region," by Yen Kuo-luang (0917/0948/0342). The author acknowledges the encouragement of Cheng Lin-sheng (6774/2551/3932). The paper was received for publication during April 1962.]

In this paper the author considers the radially symmetrical gamma oscillation nuclear model of the interaction between rotation and oscillation and the reason that the results of quantitative determination using this model are the same as for the radially asymmetrical model. The author proposes an explanation for the equivalent results when gamma is constant (the asymmetrical model) and when it is variable (the symmetrical model). The author limits his discussion to even-even nuclei in the strongly deformed region; beta oscillation is not discussed.

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GREEN FUNCTION OF SINGLE PARTICLE CALCULATED -- Peiping, Wu-li Hsueh-pao, No 10, Oct 62, pp 509-513.

[The following is an abstract appearing in an article, "The Calculation of the Green Function For a Single Particle Using the Dispersion Relation," by Hu Ning (5170/1380), Physics Department, Peking University. This paper was received for publication during March 1962.]

This paper describes the use of the analytic and unitary conditions of nucleon-antinucleon scattering amplitude in order to obtain the Green function of a single pi meson. No renormalization procedure was necessary in the computation.

INTEGRAL EQUATIONS DERIVED FOR PI-PI INTERACTION THREE PION STATES -- Peiping, Wu-li Hsueh-pao, Vol 18, No 11, Nov 62, pp 545-552

[The following is an abstract of an article, "The Pi-Pi Interaction in Three Pion States," by Hu Ning (5170/1380), of the Physics Department, Peking University. This paper was received for publication during October 1961.]

This paper describes the derivation of integral equations for the processes $\gamma \rightarrow 3 \pi$ and $K \text{ meson} \rightarrow 3 \pi$ using the Tamm-Dancoff method. The author emphasizes the importance, for successful treatment of these pion states, of the effect of pi-pi interaction on the scalar component of the isotopic spin of nuclear electromagnetic structure and the pseudo-vector pairing constant. It has already been pointed out that the usual doublet dispersion relation is incapable of handling this problem, because it neglects the interaction between the three pions. The author derives integral equations to describe this process satisfactorily by taking into account the three pions interaction; either mathematical methods or the Fredholm expansion can be used in conjunction with these equations.

The same results were obtained for the iterated approximation of the lowest state by both the integral equations derived by the author and the integral equations obtained by Khuri and Treiman using the diffusion relation. The iteration of the lowest state has the same effect as disregarding the interaction of the three pions.

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LOW ENERGY PION-PION REACTIONS EXAMINED -- Peiping, Wu-li Hsueh-pao, Vol 18, No 12, Dec 62, pp 621-628

The following is an abstract appearing in an article
"Low Energy Pion-Nucleon scattering and Pion-Pion Interaction" by P'eng Hung-an (1756/1347/1344), of the Physics Department, Peking University. The author acknowledges the assistance of Chou Kuang-chao (0719/0342/0664) and Prof Hu Ning (5170/1380). According to a footnote, the paper was received for publications in March 1962.

Part of the low energy pion-nucleon scattering amplitude is discussed from the point of view of the dispersion relation. It is pointed out that, for the $P_{1/2}$ - wave scattering, the results obtained using the CGLN formula are in basic agreement with experiments. For S-wave scattering however, even the sign obtained using the CGLN formula is in disagreement with experimental values. Moreover, the increase with q velocity is exceeding the permissible limits of unitary conditions.

Analysis makes it clear that one cannot introduce a pion-pion S-wave reaction to solve this problem and at the same time maintain agreement between the $P_{1/2}$ - wave and experiments. If, however, a once-subtracted S-wave dispersion relation is used to correct the results obtained from the CGLN formula, basic agreement with experiments is obtained. Evidently, the pion-pion reaction has little effect.

INELASTIC PION-NUCLEON REACTION EXAMINED -- Peiping, Wu-li Hsueh-pao, Vol 18, No 8, Aug 62, pp 422-434

The following is an abstract appearing in an article,
"An Examination of the Inelastic Reaction Between Negative Pions With a Momentum of 6.8 Bev/s and Nucleons," by Wang Shu-fen (3769/2885/5358), Cheng T'u-ying (6774/5543/5391), Lo Ch'un-hsun (5012/2504/3609), and Jen Ching-ju (0117/2417/0320). The authors acknowledge the guidance of Chang Wen-yu (1728/2429/5940) and Hsiao Chien (5135/0256) and the assistance of Ko Chen-hua (5516/2142/5478), Lu Sui-ling (7120/4482/5376), Wang Shih-wei (3769/0013/0251), Chu Hung-yuan (2612/3163/0337), Wang Jung (3076/1369), Tai Yuan-ten (2071/0337/2609), Huo An-hsiang (7202/1344/4382), and Wang Chu-hsiang (3769/4376/5046). This paper was received for publication in July 1962.

Studies were carried out, using a nuclear emulsion, on the inelastic reaction between negative pions with momentum of 6.8 ± 0.6 Bev/s and nucleons; 138 events were compiled. Our results agreed with those of

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previous persons for the angular distribution, distribution of momentum, etc., for the secondary charged particles of the incident negative pion-nucleon center-of-mass system; moreover, these can be basically explained by the mechanism of border collision.

These events and the number of protons in the associated atomic nuclei under examination in corresponding conditions were used to calculate the total energy ω of all the secondary particles (except protons) within their own systems. A comparison was made between the distribution of ω and the approximated theoretical curves for boundary collision 1π exchange; a peak protruding above the theoretical curve occurs in the experimental values when $\omega = 1.93$ and in the neighborhood of 1.58 Bev. The occurrence of these two peaks is discussed in this paper.

General Physics

EFFECTS OF FATIGUE LOADING ON ALUMINUM INVESTIGATED -- Peiping, Wu-li Hsueh-pao, Vol 18, No 8, Aug 62, pp 379-391

[The following is an abstract appearing in an article, "Basic Processes Taking Place in Aluminum During Fatigue Loading," by Ko T'ing-sui (5514/1656/3606) and Wang Chung-kuang (3769/0022/0342), both of the Chinese Academy of Sciences. This paper was received for publication during February 1962.]

Torsional fatigue experiments were carried out on 99.6 percent commercial aluminum and 99.99 percent high-purity aluminum (annealed and cold-worked). The shape and the area of the hysteresis loop after various stress cycles N were determined, from which the energy loss E in each cycle and the maximum torque T_m of the specimen work calculated. The $\Delta E-N$ and T_m-N curves were analyzed and different stages of the curves were correlated with the results of metallographic observations on the specimen surface during the process of fatigue loading. It was then concluded that, in the initial stage of fatigue loading, the basic process that gives rise to the change of ΔE and T_m is the pinning of the dislocations by the vacancies generated during fatigue and this occurs as a bulk effect. The localized coarse slip regions appearing in the specimen then give rise to an extra energy loss but have only an insignificant effect on T_m . Consequently, the changes of T_m and ΔE in this stage no longer correspond to one another. Such an analysis may clarify many of the discrepancies reported in the literature concerning the results of observation on the change of ΔE and T_m (representing a change in hardness) during fatigue.

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Assuming the curves experimentally observed to be a summation of the facts given rise to by these two processes (a bulk process and a localized process), and taking into account that the contributions from these two processes to ΔE and T_m vary with the fatigue amplitude, the condition of specimen treatment (annealed or cold-worked), and the impurity content of the specimen, the shape and the position of the numerous experimental curves of $\Delta E-N$ and T_m-N can be satisfactorily interpreted. However, the validity of this viewpoint needs further experimental verification.

STUDY MADE OF ALUMINUM ALLOY DISLOCATION PINNING AND UN-PINNING --
Peiping, Wu-li Hsueh-pao, Vol 18, No 8, Aug 62, pp 392-399

[The following is an abstract appearing in an article, "The Pinning and Unpinning of Dislocations in Aluminum 4-percent Copper Alloy Under Fatigue Loading," by K'o T'ing-sui (5514/1656/3606) and Wang Chung-kuang (3769/0022/0342), both of the Chinese Academy of Sciences. Cheng Mien-mien (6774/4875/4875) and Huang Yuam-shih (7806/0337/1102) are acknowledged to have participated in the experimental work. This paper was received for publication during February 1962.]

Fatigue experiments under constant torsional strain were carried out with an aluminum 4-percent copper alloy. The energy loss ΔE was found to decrease to about zero in the initial stage of the experiment and then to rise again, after a certain number of cyclic loadings. Results of metallographic observations showed that corresponding to the rise of ΔE , the slip regions became suddenly localized. These observations confirmed the authors' previous assumption that the appearance of localized coarse slip regions is one of the basic processes giving rise to ΔE .

Under fatigue loading, the maximum torque T_m was found to rise in the initial stage of experiments. It reached a maximum value and maintained itself there for a certain number of cyclic loadings, after which a sudden drop occurred; this drop corresponded to the rise of ΔE .

Such an occurrence seems to be an indication of the sudden unpinning of those dislocations which were pinned during the initial stage of fatigue loading.

It is contemplated that the process of pinning of dislocations may be due to the nucleation of clusters of copper solute atoms drawn from the Cottrell atmosphere formed during the initial stage of experiments, along certain favorable sections of the dislocations,

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in consequence of which, other sections of the dislocations were subsequently unpinned from copper solute atoms. As the clusters grow in size, the length of the unpinned dislocation segments increases until a certain critical value is reached, at which point an "avalanche" occurs and numerous dislocations are produced. Such an event results in a sudden drop of T and leads to the formation of localized slip regions which give rise to an increase of ΔE .

FURTHER WORK REPORTED ON ALUMINUM-COPPER ALLOY FATIGUE -- Peiping, Wu-li Hsueh-pao, Vol 18, No 8, Aug 62, pp 400-410.

[The following is an abstract appearing in an article, "The Effects of Aging, Intermittent Loading and Re-Solution Treatment Upon the Fatigue Behavior of Aluminum-Copper Alloys," by Ko T'ing-sui (5514/1656/3606), Huang Yuan-shih (7806/0337/1102), and Wang Chung-kuang (3769/0022/0342), all of the Chinese Academy of Sciences. The authors acknowledge the assistance of Liu Min-chih (0491/3046/3112). This item was received for publication during February 1962.]

This paper examines the effects of various treatments upon the energy loss E and the maximum torque T in aluminum-copper alloys containing 1, 2, and 4 percent copper under fatigue loading. Corresponding metallographic observations were made.

Experiments made with aluminum 1-percent copper alloy showed that when the applied torsional strain is large, the shapes of the ΔE and T_m curves are similar to those of high purity and commercial aluminum; when the torsional strain is small, or when the specimen is aged at room temperature before the fatigue experiment, the shapes of the ΔE and T_m curves are similar to those of aluminum 4-percent copper alloy. These results can be interpreted in terms of the interaction between solute atoms and dislocations.

Experiments on intermittent fatigue loading were made on aluminum 1-percent copper and aluminum 2-percent copper alloys. The results confirmed the view that the rise of ΔE in the later stage of the fatigue experiment is due to the occurrence of coarse slip bands in the specimen and is not due to the softening the specimen with over-aging.

Experiments were performed by subjecting aluminum 4-percent copper alloys to fatigue and re-solution treatments. Judging from the behavior exhibited by the ΔE and T_m curves after each treatment, the conclusion may be drawn that the fatigued specimen can be made to recover its original condition if the specimen is treated immediately after the rise of ΔE . However, if the specimen is treated some time after the rise of ΔE , the fracture of the specimen is hastened because of the occurrence of fatigue cracks in the specimen.

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Two conclusions of practical significance can be made on the basis of our experimental result: (1) it is possible to detect a formation of initial fatigue cracks by measuring AE because the occurrence of coarse slip bands presages crack formation; (2) it is possible to delay the occurrence of coarse slip bands and to thus raise the fatigue life of high-aluminum alloys by alloying and heat treatment.

PERIODIC FIELD LENSES DISCUSSED -- Peiping, Wu-li Hsueh-pao, Vol 18, No 10, Oct 62, pp 514-526

[The following is an abstract appearing in an article, "The Image-Forming Characteristics of the Periodic Field Lens," by Ch'en Chien-p'u (7115/7002/3877). The author acknowledges the assistance of Lou Ko (2869/2706), of Peking University, and Yeh Ming-han (5509/6900/3352). This paper was received for publication on 26 March 1962.]

This paper proposes a method to investigate the image-forming characteristics of periodic field lenses. A periodic field formed from three to five lens elements can be used as an ionic lens to form images of ion beams. Generally, it possesses much stronger focusing ability than a single lens element under the same voltage ratio. Periodic field lenses have been used as initial focusing systems of ion sources in electrostatic accelerators without, however, a detailed analysis having been made of their image-forming characteristics.

Treating the periodic field lens as a combination of various lens elements, its cardinal points can be expressed using the Ferraris characteristic determinant. An expression for the cardinal points of a periodic field lens with three or five lens elements was given for normal conditions treating the lens elements as immersion lenses. These expressions involve the cardinal point parameters of the lens elements and the geometric parameters of the electrode systems. These expressions are very simple in form and easy to use in computations but capable of maintaining sufficient accuracy. Analysis of the individual elements in the expression facilitates understanding of the lens characteristics.

A periodic magnetic field composed of short magnetic lenses is discussed as a general case. Using the above expressions, the image-forming characteristics of some periodic field lenses with symmetrical two-tube lenses with small-gap used as immersion lens elements have been calculated and analyzed.

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A NEW REPRESENTATION OF STATISTICAL PHYSICS DESCRIBED -- Peiping, Wu-li Hsueh-pao, Vol 18, No 11, Nov 62, pp 563-571

[The following is an abstract appearing in an article, "A New Representation of Statistical Physics I. The Mathematical Structure of the Γ^2 Representation," by Ch'en Ch'un-hsien (7115/2504/0341). This article was received for publication in June 1962.]

This paper introduces the extended Hilbert space $\Gamma^2 \equiv \Gamma \times \Gamma$. It is demonstrated that, within this space, the mean value of mixed statistical ensembles disintegrates to form the mean of any quantum state; definite expression is given to all matrices within this new representation. The Wick-Bloch theorem in statistical perturbation theory is a necessary deduction from the inherent properties of matrices in Γ^2 space.

LCAO-SCF METHOD APPLIED TO LONG-CHAIN MOLECULE -- Peiping, Wu-li Hsueh-pao, Vol 18, No 11, Nov 62, pp 553-557

[The following is an abstract appearing in an article, "On the Nonlinear Integral Equations in the Linear Combinational Atomic Orbit -- Self-Consistent Field Method," by Ch'en Shih-kang (7115/1709/0474). The author acknowledges the direction of Li Yin-yuan (2621/5593/6678) and Ch'en Ch'un-hsien (7115/2504/0431) and the assistance of Liu Te-lin (0491/1795/2651). This paper was received for publication in October 1961.]

In this paper, Roothaan's linear combinational atomic orbit -- self-consistent field (LCAO-SCF) method is extended to treat the electron energy spectra of the infinite long-chain conjugated molecule. A system of nonlinear integral equations is obtained. These equations and the nature of their solution is discussed as is the question of the existence of anomalous solutions. Methods of linearization and of approximation solutions are also discussed.

C-O-N-F-I-D-E-N-T-I-A-L

RESEARCH CONDUCTED ON ENERGY BANDS OF ZINC BLENDE CRYSTALS -- Peiping,
Wu-li Hsueh-pao, Vol 18, No 10, Oct 62, pp 491-500

[The following is an abstract appearing in an article,
"The Influence of the Chemical Bond Upon the Energy Bands
of Zinc Blende Structure," by Ch'en Shih-kang (7115/1709/
0474), Chang Ch'i-hsiang (1728/4860/7449), and Liu Te-sen
(0491/1795/2773). The authors acknowledged the assistance
of Ch'en Hsien-heng (7115/7052/0077), Li Yin-yuan (2621/5593/
6678), Huo Yu-p'ing (7202/5940/1627), and Yang Shun-hua
(2799/7311/5478). This paper was received for publication
on 9 October 1961.]

In this paper, the parameters of the chemical bond of zinc blende
crystals are introduced using Slater and Koster's simplified linear-
combined atomic-orbit (LCAO) method. Functions of these parameters are
expressed in terms of the energy levels at characteristic points in the
Brillouin zone. The dependence of forbidden band width and the position
of conducting band minima upon variation in the chemical composition and
the variational situation are discussed. There was definite agreement
between the results obtained and previously known facts.

SOUND ABSORPTION AND RELAXATION OF MAGNESIUM SULFATE -- Peiping,
Wu-li Hsueh-pao, Vol 18, No 10, Oct 62, pp 501-508

[The following is an abstract appearing in an article,
"Sound Absorption Theory in Various Chemical Reactions and
the Relaxation Mechanism of Magnesium Sulfate in Aqueous
Solution," by Ch'ien Tsu-wen (6929/4371/2429), Institute of
Electronics, Chinese Academy of Sciences. The author ac-
knowledges the suggestions of Prof Wei Jung-chueh (7614/
2837/3635) and Prof Wang Te-chao (3076/1795/2507). This
paper was received for publication in January 1962.]

This paper first presents the derivation of a relaxation absorption
formula using chemical thermodynamic methods and the suppositions of
phenomenological theory. The Debye-Huckel ionic cloud theory is then
borrowed and applied to magnesium sulfate in aqueous solution; its rela-
tion to previously published works is discussed. Finally, it is pointed
out that the equation showing magnesium sulfate in equilibrium with
bivalent magnesium ions and bivalent sulfate radicals is not a suffi-
ciently accurate representation of the relaxation absorption mechanism
of magnesium sulfate in aqueous solution.

C-O-N-F-I-D-E-N-T-I-A-L

REACTION STRENGTH OF CONSTANT-VOLTAGE HYDROXIDE FUEL CELLS STUDIED -
Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 55-58

[The following is an abstract of an article, "Research on the Constant-Voltage Hydroxide Fuel Cells -- Report No 1," by Li Ch'un-t'ang (2621/2504/4355/0781), Chu Pao-lin (2612/5508/3829), and Chang Ta-yu (1728/1129/3558).]

This paper reports on studies made of a constant-voltage 90 degree centigrade hydroxide fuel cell, toward which there has been increasing interest accorded over the past few years. In this paper, the techniques used in making the electrodes are fixed and the emphasis is placed on the study of the strength of the electrode reaction. The results of the experiments showed that absorption at the H_2 -electrode is of great importance to the required surface area of the electrode while the O_2 -electrode is not as important in this and other respects. Part 2 of this report will discuss the dynamical processes at the electrodes and the effect of several types of additives upon the electrodes reaction.

ELECTROMAGNETIC FIELDS IN ANISOTROPIC MEDIA STUDIED -- Peiping,
Wu-li Hsueh-pao, Vol 18, No 12, Dec 62, pp 636-645

[The following is an abstract appearing in an article, "On One Method of Finding the Green Tensor Functions of Electromagnetic Field in Anisotropic Media," by Ku Fu-nien (7357/4395/1628), of Kiangsi University. The author acknowledges the assistance of Lu Pao-wei (0712/0202/4850). According to a note, this paper was received for publication in March 1962.]

In this paper the author suggests one method of finding the Green tensor functions in whole space. This is sometimes referred to as the elementary solution of the corresponding differential equation. This method is based on the Fourier transform. Owing to complexity, some simplifications were necessary. Initially, anisotropic media were considered separately as magneto-gyrotropic media and electrogyrotropic media. For magnetogyrotropic media, such as ferrite, μ is a tensor while ϵ remains scalar. Conversely, for electrogyrotropic media, such as plasma, ϵ is tensor and μ remains scalar. Secondly, taking advantage of the smallness of the matrix μ_p , an expansion in power series of μ_p is made and the calculations for first order approximation are carried out. The concrete results are expressed in formulae and the physical meaning of the Green tensor value and the effective region of the asymptotic expansions are discussed.

C-O-N-F-I-D-E-N-T-I-A-L

ELECTROMAGNETIC THEORY OPERATORS DISCUSSED -- Peiping, Wu-li Hsueh-pao,
Vol 18, No 12, Dec 62, pp 629-635

[The following is an abstract appearing in an article,
"Some Operator Properties In Electromagnetic Theory," by
Ku Fu-nien (7357/4395/1628), of Kiangsi University. The
author expresses his appreciation for the corrections made
in this paper by Prof Lu Pao-wei (0712/0202/4850). Accord-
ing to a footnote, this paper was received for publications
in March 1962.]

In this paper, the author examines the use of Maxwell's equations as
an operator in nonhomogenous and anisotropic media. It is defined in a
bounded region, which can be understood as a resonant cavity in microwave
technique. As these cavities are filled with ferrite, plasma, or other
anisotropic media, these new media become more and more important in
practice. This paper demonstrates that under some conditions imposed on
 μ , ϵ and on the boundary value, the operator becomes symmetrical.
The symmetry and self-adjoint property is ver convenient in eigenfunction
expansion problems. In addition, the orthogonality of chacteristic
oscillation and reciprocity theorems were derived in this paper.

If the conditions of symmetry are not satisfied, the concept of
adjoint cavity is introduced. The so-called adjoint cavity coincides
with the primary cavity in geometrical shape but μ , ϵ and boundary
conditions do not coincide. It has some similarities with self-adjoint
cavity in orthogonality and reciprocity theorems.

SOLENOIDAL SYMMETRICAL MAGNETIC FIELDS CALCULATED -- Peiping, Wu-li
Hsueh-pao, Vol 18, No 11, Nov 62, pp 572-585

[The following is an abstract appearing in an article,
"The Calculation of Solenoidal Symmetrical Magnetic Fields,"
by Ku Yung-nien (7357/3057/1628). This article was received
for publication in June 1962.]

This paper employs the scalar potential method to obtain a general
solution for the distribution of the magnetic field produced by helical
current on the periphery of a cylinder of infinite length. The magnetic
field formula for the mean distribution when there is a wire on the
periphery of the cylinder is also provided. The vector potential method
was employed for the calculation of the magnetic field when the wire was
of finite length. From the results of the above the ripple magnetic field
as the helical distance approaches zero as a limit was calculated.

C-O-N-F-I-D-E-N-T-I-A-L

PHOTOMULTIPLIER RESOLUTION EXAMINED -- Peiping, Wu-li Hsueh-pao, Vol 18, No 11, Nov 62, pp 600-604.

[The following is an abstract appearing in an article, "Investigation of the Time Resolution Characteristics of a Photomultiplier," by Wang Shao-min (3769/4801/3047), Physics Department, Hangchow University. The author acknowledges the assistance of Prof Chou T'ung-ch'ing (0719/0681/1937) and Chu Ang-ju (2612/2491/1172), of Fudan University, and of Chang Yu-p'ei (1728/5940/1014), Hangchow University. The paper was received for publication in July 1962.]

A measurement of the time resolution limit produced by a photomultiplier with the accuracy of $\pm 2 \sim 5 \times 10^{-9}$ seconds has been made. With the aid of a hydrogen lamp, illuminating at $5 \sim 8 \times 10^{-8}$ seconds, the flight times of the photoelectrons of several kinds of photomultipliers was determined by employing the oscilloscopic method; an investigation of the effect of the outer circuit of RCA-5819 for resolution time has been made. An improved working state suitable for instantaneous observation of the spectral excitation process has also been determined.

SPECTRAL EXCITATION PROCESSES OBSERVED IN SPARK -- Peiping, Wu-li Hsueh-pao, Vol 18, No 11, Nov 62, pp 594-599

[The following is an abstract appearing in an article, "Instantaneous Observation of the Spectral Excitation Processes in the Spark," by Wang Shao-min (3769/4801/3047), of the Physics Department, Hangchow University. The work reported in the paper was begun in 1960 under I. S. Abramson and completed at Fudan University in 1961; the author acknowledges the direction of the following members of the Optics Teaching and Research Section: Prof Chou T'ung-ch'ing (0719/0681/1937), Chu Ang-ju (2612/2491/1172), and Li Fu-ming (2621/1381/6900). The paper was received for publication during June 1962.]

The time resolution process of excitation intensity of spectral lines in the spark light source was measured with apparatus with a resolving time of 1×10^{-7} seconds. In the spark, operating under the critical damping state with flash time at about 2×10^{-6} seconds, the ion lines of higher excitation potential appeared first and were of very short duration. The experiments showed that, with respect to time, two lines (AlI and MoII) iterated at 3961.5 angstroms could be almost fully separated, providing an opportunity to avoid the interferences and to use the sensitive line in spectral analysis.

C-O-N-F-I-D-E-N-T-I-A-L

RESEARCH ON CHEMICAL BONDING OF SEMICONDUCTORS -- Peiping, Wu-li Hsueh-pao,
Vol 18, No 12, Dec 62, pp 611-620

[The following is an abstract appearing in an article,
"A Chemical Bonding Model for Covalent Semiconductors,"
by Huo Yu-p'ing (7202/5940/1627), Liu Chih-yuan (0491/
1807/6678), and Ch'en Tsiao-lan (7115/5135/5695). Accord-
ing to a footnote, this paper was received for publication
in October 1961; the revised draft was received September
1962.]

This paper discusses the use of the concepts of chemical bonding to describe semiconductor properties, especially the phenomenon of transfer. In order to facilitate the concrete pinpointing of Group III-V chemical compounds, the current was described on the basis of transit probability for electrons between bonds; the two mechanisms of electron transition are also discussed. Finally, the authors discuss incoherent scattering; after the separation of the incoherent atoms into regions according to whether they react with relatively distant or neighboring electrons, two scattering mechanisms were obtained, the analogous mobility ratios are, respectively, $T^{3/2}$ and $T^{-1/2}$.

RESISTANCE NETWORK ANALOG CONSTRUCTED -- Peiping, Wu-li Hsueh-pao,
Vol 18, No 12, Dec 62, pp 657-669

[The following is an abstract appearing in a article,
"A Resistance Network Analog for Magnetic Fields With
Both Axial and Plane Symmetry," by Hsin Hsien-chieh (1823/
6343/2638), Ts'ao Chia-lin (2580/1367/7792), and Wu Ts'ai-te
(0702/2088/1795). The authors acknowledge the assistance in
part of the work of P'an Yuan (3382/0997), Li Su-jung (2621/
4790/5554), and Chou Wen-tsung (0719/2429/1350). According
to a footnote, this paper was submitted for publication in
June 1962.]

This paper discusses the simulation of an axial and plane symmetrical magnetic field by a resistance analog and related current injection problems. An analog with current injection, voltmeter, and associated apparatus was constructed on this principle. The central part of the network contains 10 times 14 units, extended by end strips to 28 and 32 units in z and r directions respectively. Experiments were carried out using this analog to simulate several types of fields and coil inductances which have precise analytical solutions. Errors of the network under various conditions were noted and their origin traced. Experience showed that the analog is reliable. It shortens considerably the time required for the design of many complex magnetic configurations.

C-O-N-F-I-D-E-N-T-I-A-L

STABILIZED POWER SUPPLY FOR ELECTROSTATIC ANALYZER IN OPERATION -- Peiping,
Wu-li Hsueh-pao, Vol 18, No 11, Nov 62, pp 558-562

[The following is an abstract appearing in an article,
"A Stabilized \angle 20 Kev Power Supply for an Electrostatic
Analyzer," by Hsin Hsien-chieh (1823/6343/2638) and Lu
Yu-ch'ing (0712/0151/1987). The authors acknowledge the
assistance of Hsia Kuang-ch'ang (1115/1684/2490) and Feng
Hsueh-shun (7458/1331/5293) and the suggestions of Yeh
Ming-han (5509/6900/3352). The paper was received for
publication in March 1962.]

A stabilized high voltage power supply for an electrostatic analyzer
is described in this paper. The principles and peculiarities of the
circuit design have been analyzed in some detail. The output voltage
of this instrument may be varied [continuously] from \angle 5 to \angle 20 kilo-
volts. Within this range, the voltage stability is better than \angle 0.015
percent (for about 3 hours); the ripple voltage is one part in 16,000.
This instrument has served normally for more than 2 years and has been
convenient to operate and maintain.

FLICKERING PHENOMENON IN FERRORESONANT CIRCUITS DISCUSSED -- Peiping,
Wu-li Hsueh-pao, Vol 18, No 12, Dec 62, pp 646-656

[The following is an abstract appearing in an article,
"On the Flickering Phenomenon in Ferroresonant Circuits,"
by Hsia Ch'eng-ch'uan (1115/2110/6898), of Sian Chiao-t'ung
University. According to a footnote, this paper was received
for publication in April 1962.]

This paper describes the observation of the flickering phenomenon in
a ferroresonant circuit containing incandescent lamps of suitable capacity.
The explanation of this flickering phenomenon is given, the conditions
under which this flicker takes place are pointed out, and the method of
computing the flicker period is given. Experimental data agree approxi-
mately with theoretical results.

C-O-N-F-I-D-E-N-T-I-A-L

MISCELLANEOUS

SCOPE OF FOREIGN SCIENTIFIC TRANSLATIONS AVAILABLE TO READERS -- Peiping,
Jen-min Jih-pao, 27 May 63, p 4

[The following information was extracted from an advertisement bearing the heading, "China Commission on the Translation and Compilation of Foreign Scientific and Technical Literature and the China Institute of Scientific and Technical Information solicit subscriptions for publications for the latter half of 1963."]

One hundred sixty-three serial publications are listed under three categories: (1) Reading Guides, including abstract journals and indexes to scientific and technical literature; (2) Journals of translations, including the scientific and technical K'uai-pao (1816/1032) Express Bulletin series and the I-ta'ung (6230/0654 Collected Translations) series; and (3) Research Activities.

The following titles are listed as scientific and technical abstract journals. Most of them have numbered sections, on subjects as described below, which sections are published separately. The periodicity of these publications is monthly unless otherwise indicated.

1. Shu-hsueh Wen-chai (Mathematics Abstracts): Sections 1-3 on differential equations, probability theory-mathematical statistics, and pan-functional analysis, respectively.
2. Wu-li Wen-chai (Physics Abstracts): Sections 1-3 on magnetism, semiconductors, and optics, respectively.
3. Li-hsueh Wen-chai (Mechanics Abstracts): Sections 1-4 on general mechanics, gas dynamics-aerodynamics, elastic and plastic mechanics, hydro-mechanics and hydraulics, respectively.
4. Hua-hsueh Wen-chai (Chemistry Abstracts): Sections 1-5 on solid fuel processing, inorganic technology, silicate materials, analytical chemistry, and macromolecular chemistry and technology, respectively.
5. Ti-chih Wen-chai (Geology Abstracts): Sections 1-2 on sedimentation, tectonics, mineral deposits; and hydrographic and engineering geology, respectively.
6. Ti-ch'iu Wu-li K'an-t'an Wen-chai (Geophysical Prospecting Abstracts).
7. Sheng-wu-hsueh Wen-chai (Biology Abstracts): Sections 1-3 on botany, human and animal physiology, and microbiology, respectively.

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8. Sheng-wu Hua-hsueh Wen-chai (Biochemistry Abstracts).
9. Shih-yen Sheng-wu-hsueh Wen-chai (Experimental Biology Abstracts).
10. I-hsueh Wen-chai (Medical Abstracts): Sections 1-4, (contents not described); Sections 5-6 on cardiovascular diseases, and tuberculosis and respiratory diseases, respectively (both published quarterly).
11. Nung-yeh Wen-chai (Agriculture Abstracts): Sections 1-5 on farming and gardening, pedology (published bimonthly), economic entomology, plant pathology, and animal husbandry and veterinary medicine, respectively.
12. Lin-yeh Wen-chai (Forestry Abstracts): Sections 1-2 on forestry and forest industries, respectively (both published bimonthly).
13. Shui-ch'an Wen-chai (Aquatic Products Abstracts) (published bimonthly).
14. Ch'ing-kung-yeh Wen-chai (Light Industry Abstracts)
15. Shih-p'in Kung-yeh Wen-chai (Food Industry Abstracts).
16. K'uang-yeh Wen-chai (Mining Abstracts): Sections 1-2 on coal mining, and metals, respectively.
17. Yeh-chin Wen-chai (Metallurgy Abstracts): Sections 1-4 on rare earth metals, nonferrous metals, ferrous metallurgy, and metal materials, respectively.
18. Shih-yu - yu T'ien-jan-ch'i Wen-chai (Petroleum and Natural Gas Abstracts).
19. Chi-hsieh Chih-tsao Wen-chai (Machine Building Abstracts): Sections 1-5 on general problems, materials, and parts; machine building technology; forging technology and equipment; casting technology and equipment and precision machinery, instruments, and photographic and cinematic techniques, respectively. Sections 7,9-12 on power systems; ships; automotive aircraft and rockets; hoisting and moving machinery, and transportation through pipes, respectively. Sections 15-17 on construction, roadbuilding, and mining machinery; chemical engineering and refrigerating machinery; and blast furnaces and turbines (published quarterly); respectively.
20. Nung-yeh Chi-hsieh Wen-chai (Agricultural Machinery Abstracts).

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21. Tien-kung Wen-chai (Electrical Engineering Abstracts): Sections 1-6 on general electrical engineering; power engineering; electrification, generators, and electrical appliances; automation and telematics; electronics and its applications; and radio engineering and telecommunications engineering; respectively.

22. T'ieh-lu Wen-chai (Railway Abstracts)

23. Liang-ts'e Chi-shu Wen-chai (Mensuration Abstracts).

24. Je-tai Fang-hu Wen-chai (Tropical Protection Abstracts) (published bimonthly).

Monthly indexes to scientific and technical literature in each of the following areas of concern are listed:

Interscience and technology, mathematics, physics, nuclear energy, mechanics, chemistry and chemical engineering, geophysics and astronomy, geology and geography, biology, medicine, agriculture, forestry, aquatics, hydraulic engineering, light industry, textiles, mining, metallurgy, machine building principles and technology, electromechanical engineering, electric power engineering, automation and communications, highway transportation, railway transportation, waterway transportation, aviation, construction techniques, surveying and cartography, and mensuration.

Thirty-five titles listed under the "Express Bulletin" series are all semimonthlies except two, which are a monthly and a thrice-monthly publication, and cover the following fields:

Atomic energy, semiconductors, new energy sources, inorganic technology, organic chemical industry, macromolecular materials, petroleum, geology, hydrographic and engineering geology, physical and chemical prospecting, aquatics, forestry, forest industries, hydraulic engineering, textiles, general purpose machinery, heavy machinery, boilers and turbines, agricultural machinery, tractors, internal combustion engines, automobiles, electrical engineering, electrification and automation, mensuration and instrument fabrication, radios, posts and telecommunications, mining, metallurgy, highway transportation, harbor engineering and waterways, transportation by watercraft, locomotives and rolling stock, railway construction, and railway transportation, communication, and signals.

Twenty-six titles listed under the "Collected Translations" series are published monthly, bimonthly, or quarterly and cover the following subjects:

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Physics, space travel, isotopic applications, geology, surveying and cartography, agriculture, nonmetallic minerals, chemical fertilizers, aquatics, tropical crops, chemical fibres, textiles, fat chemistry, sugar manufacturing, foods, liquor manufacturing, hydraulic and hydroelectric engineering, agricultural machinery, mechanical [engineering], shipbuilding, machine tools, radios, mensuration and instrument fabrication, coal, metal mines, and postal administration.

Six titles listed under "Research Activities" are published monthly or bi-monthly and cover the following subjects: Biological sciences, foreign medicine, foreign aquatics, foreign textile techniques, foreign machinery, and interscience and technology.

Of the publications mentioned above, the following are to be initiated in October 1963: Section 4 of Li-hsueh Wen-chai (Mechanics Abstracts); Section 5 of Nung-yeh Wen-chai (Agriculture Abstracts); Sections 1-2 of K'uang-yeh Wen-chai (Mining Abstracts); "Express Bulletins" on aquatics and internal combustion engines; "Collected Translations" on isotopic applications, nonmetallic minerals, chemical fertilizers, fat chemistry, liquor manufacturing, and metal mines.

A note that T'ieh-lu Wen-chai (Railway Abstracts) was published by T'ieh-tao K'o-hsueh Yen-chiu-yuan (Academy of Railway Sciences) indicates that the other publications are probably published by the originators of this advertisement.

Price ranges listed are 0.20-2.20 yuan per copy for the abstract journals, 0.30-2.60 yuan per copy for the indexes to the scientific literature, 0.05-0.20 yuan per copy for the "Express Bulletin" series, 0.30-0.95 yuan per copy for the "Collected Translations" series, and 0.35-0.50 yuan per copy for "Research Activities" publications.

KOREAN SCIENTIST ARRIVES IN PEIPING -- Peiping, Jen-min Jih-pao, 24 Apr 63, p 5

At the invitation of the State Scientific and Technological Commission of the People's Republic of China, Kim Sok-hyang, director of the History Research Institute of the Korean Academy Sciences and representatives of the Korean Democratic Scientific Workers League arrived in Peiping on the afternoon of 22 April 1963 for a friendly visit.

TWO JAPANESE SCIENTISTS ARRIVE IN PEIPING -- Peiping, Jen-min Jih-pao, 1 May 63, p 4

At the invitation of the China Scientific and Technical Association for a friendly visit, two Japanese scientists, Prof Tsuge Hideomi (26-9/2784/4423/5255) and Prof Tokuda Mitoshi (1795/3944/1785/4457) arrived in Peiping by air on 30 April 1963.

C-O-N-F-I-D-E-N-T-I-A-L

APPOINTMENTS AND DISMISSALS MADE BY STATE COUNCIL -- Peiping, Jen-min Jih-pao, 25 Mar 63, p 2

At its 127th session on 16 March 1963, the State Council announced the following appointments:

Chen Hua (3914/5363) was made vice-president of Lanchow University.

Ku Ch'ung-chih (6328/0394/0037) was made president of Shansi Mining College.

Cheng T'ien-t'ing (6774/1131/2185) was made vice-president of Nan-K'ai University.

Li Jui-fu (2621/6904/1133) and Li Ch'un-fen (2621/2504/5358) were made vice-presidents of East China Normal University.

The following dismissal was announced by the State Council:

Ma Wen (7456/2429), as vice-president of Peiping Aeronautical College.

APPOINTMENTS AND DISMISSALS MADE BY STATE COUNCIL -- Peiping, Kuang-ming Jih-pao, 22 May 63, p 1

At its 131st session on 20 May 1963, the State Council announced the following appointments:

P'eng Min (1756/2404) was made vice-chairman of the State Scientific and Technological Commission.

T'iu Tzu-kuang (0491/1311/0342) was made president of Shantung Mining College.

Kuo Ying-ch'iu (6753/1758/4428) was made vice-president of the People's University of China.

K'uang Ya-ming (0562/0068/2494) was made president of Nanking University.

Lo Hsiung-ts'ai (5012/7160/2088) was made vice-president of Chung-shan University.

Jen Chen (0117/4176) and K'ang Hsin-wu (1660/6580/2477) were made vice-presidents of South China Engineering College.

Hua T'ai (5363/3077) was made vice-president of Lo-yang College of Agricultural Mechanization.

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Wang Chih-cho (3769/0037/9587) was made vice-president of Wuhan Surveying and Cartography College.

The following dismissals were announced by the State Council:

K'uang Ya-ming (0562/0068/2494), as president of Kirin University.

Ch'en Yung-ling (7115/3057/7881), as vice-president of Wuhan Surveying and Cartography College.

BIOGRAPHIC INFORMATION

[The following biographic information on selected Chinese Communist scientific and technical personnel was taken from the sources cited in parentheses.]

CHAO Hsun (6392/3169), deputy director, Institute of Linguistics and Philology, Chinese Academy of Sciences; gave a report at a symposium of the China-Bulgaria Friendship Association on 30 May 1963. (Peiping, Jen-min Jih-pao, 31 May 63, p 3)

CHAO P'ing-huang, Moscow Institute of Petrochemical and Gas Industry imeni I. M. Gubkin; author of dissertation for the scientific degree of Candidate of Technical Sciences, "Experimental Investigation of Certain Problems on the Permeability of Cement Solutions Used in Cementing Petroleum Wells," in Russian, (Moscow, Vechernyaya Moskva, 27 Apr 63, p 4)

CHAO T'i-sheng, All-Union Scientific Research Institute of Hard Alloys, USSR; author of article, "Strengthening the Protective Roller," in Russian. (Moscow, Stroitel'stvo Truboprovodov, No 5, May 63, p 38)

CHAO Yuan Institute of Machine Studies, Academy of Sciences USSR; author of dissertation for the scientific degree of Candidate of Technical Sciences, "Investigation of the Resistance of Metals, Steels, and Alloys to Abrasion," in Russian. (Moscow, Vechernyaya Moskva, 6 May 63, p 4)

C-O-N-F-I-D-E-N-T-I-A-L

CH'EN Ching-jun (7115/2529/3387), Institute of Mathematics, Chinese Academy of Sciences; author of article, "The Lattice Points in a Circle," in English; first published in Chinese in Acta Mathematica Sinica, Vol 13, No 2, 1963; also, "Improvement on the Asymptotic Formulas for the Number of Lattice Points in a Region of Three Dimensions (II)," in English; received for publication 10 February 1963. (Peiping, Scientia Sinica, Vol 12, No 5, May 63, pp 633-649 and 739-741)

CH'EN Hsiao-su, Moscow Power Engineering Institute; author of dissertation for the scientific degree of Candidate of Technical Sciences, "Investigation of the Hydrodynamics of Steam Mixture Under Nonstationary Conditions," in Russian. (Moscow, Vechernyaya Moskva, 1 May 63, p 4)

CH'ENG Kuang-yueh, coauthor with M. Kh. Karapet'yants of article, "Method of Combined Calculation of Physicochemical Properties," in Russian. (Moscow, Khimicheskaya Promyshlennost', No 3, Mar 63, pp 192-201)

CH'ENG Te-ming, Moscow Institute of Steel and Alloys; author of dissertation for the scientific degree of Candidate of Technical Sciences, "Study of the Flotation Properties of Columbite and Certain Associated Minerals," in Russian. (Moscow, Vechernyaya Moskva, 12 Apr 63, p 4)

CH'ENG Te-ming, Moscow Institute of Steel and Alloys; coauthor with S. I. Pol'kin and V. I. Solnyshkin of article, "Effect of Preliminary Treatment of Columbite On Its Adsorption and Flotation Properties," in Russian. (Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Sovetskaya Metallurgiya, No 2, Mar/Apr 63, pp 42-48)

CHU Ching-tzu (2612/2529/2737)

CH'EN Chien-chi (7115/1696/1015)

SHEN Shao-huai (3088/4801/2849)

HO Chang-yin (0149/4545/6892)

All affiliated with Taiyuan Polytechnic Institute; coauthors of article, "A Universal Hob for Corrected Circular Arc-Tooth Point-Meshing Gears," in English; first published in Chinese in the Chinese Journal of Mechanical Engineering, Vol 10, No 2, 1962, pp 79-87. (Peiping, Scientia Sinica, Vol 12, No 5, May 63, pp 723-735)

C-O-N-F-I-D-E-N-T-I-A-L

- CHIANG Chia-ho (3068/0857/4421), Institute of Mathematics, Chinese Academy of Sciences; author of article, "Essential Equilibrium Points of n-Person Noncooperative Games (II)," in English; received for publication 28 Aug 62. (Peiping, Scientia Sinica, Vol 12, No 5, May 63, pp 651-671)
- CHIN Ti-yuan, Moscow Geological-Prospecting Institute imeni S. Ordzhonikidze, author of article, "Brief Lithological Characteristics of Lower Cretaceous Deposits in the Southwestern Part of Mountainous Crimea," in Russian. (Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy Geologiya i Razvedka, No 4, Apr 63, pp 47-55)
- CHOU Jun-p'ei, Institute of Organoelemental Compounds, Academy of Sciences USSR; coauthor with V. V. Korshak, S. V. Rogozhin, T. A. Sidorov, and Li. I. Komarova of article, "Synthesis and Structure of Polymeric Compounds Obtained From Saturated Alkylaromatic Compounds," in Russian; received for publication 29 June 1962. (Moscow, Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, No 5, May 63, pp 912-921)
- CHU Ch'un-hua, Leningrad Technological Institute; coauthor with L. S. Efros of article, "Intermediate Products and Dyes, Containing Residues of β -Chloropropionic Acid. I," in Russian; manuscript received for publication 2 April 1962. (Moscow-Leningrad, Akademiya Nauk SSSR, Zhurnal Obshchey Khimii, Vol 33, No 5, May 63, pp 1539-1543)
- FAN Kuo-i (5400/2654/0308), Institute of Zoology, Chinese Academy of Sciences; author of article, "Studies on the Effects of Cortisone on the Development of the Mammarys and the Mammary Secretions in the Pregnant Rat." (Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 60-62)
- FANG Tsung-hsi (2455/1350/3556), author of an article entitled "General Principle's for the Cultivation and Breeding of New Varieties of Kelp." (Peiping, Kuang-ming Jih-pao, 29 Mar 63, p 2).
- HUANG Chia-szu (7806/1367/7475), president, Chinese Academy of Medical Sciences
- MENG Chi-mao (1322/4949/2021), chairman, China Surgical Society, China Medical Society, also president, Peiping Chi-shui-t'an Hospital
- YEH Yen-ch'ing (5509/5838/1987), professor, Shanghai Second Medical College

C-O-N-F-I-D-E-N-T-I-A-L

FANG Hsien-chih (2455/0341/0037), chief, Osteology Department, Tientsin People's Hospital

SHIH Chi-hsiang (0670/3444/3276), deputy chief of Burn Ward, Shanghai Kuang-tz'u Hospital

All of the above participated in the Traumatic Surgery Conference in Sian in mid-May. (Peiping, Kuang-ming Jih-pao, 30 May 63, p 2)

HUANG Hsiao-chuang (7806/2556/1641)

CHUNG Ming (6945/3298)

CHUNG Kuo-jung (6945/0948/2837)

CHIN Yu-kai (6855/2589/6963)

All are coauthors of an article, "A Magnetic Field Current Stabilizer for a Heavy Particle Spectrometer." (Peiping, Wu-li Hsueh-pao, Vol 18, No 10, Oct 62, pp 540-543)

HUANG Kuan-lin, Moscow State University; coauthor with L. T. Butayenko and N. A. Bakh of article, "Radiolysis of Sulfuric Acid," in Russian; received for publication 19 Dec 1962. (Moscow, Doklady Akademii Nauk SSSR, Vol 149, No 5, 11 Apr 63, pp 1099-1102)

HUANG Min-tao, Moscow State University; author of dissertation for the scientific degree of Candidate of Chemical Sciences, "Certain Sulfur-Containing Organic Substances As Reagents for Extraction Photometric Determination of Selenium," in Russian. (Moscow, Vechernyaya Moskva, 6 May 63, p 4)

HUANG Shang-yao, Moscow Geological-Prospecting Institute imeni S. Ordzhonikidze; author of dissertation for the scientific degree of Candidate of Geological-Mineralogical Sciences, "Deposits of Thermal Waters in Sedimentary Deposits and in Massifs of Igneous Rock, and Methodological Characteristics of Their Study (Based on North Caucasus and Altai)," in Russian. (Moscow, Vechernyaya Moskva, 27 Apr 63, p 4)

C-O-N-F-I-D-E-N-T-I-A-L

- JEN Te-hou, Laboratory of Nuclear Reactions, Joint Institute of Nuclear Research; coauthor with V. Knobloch of a pamphlet, "Electrophoresis of Complex Compounds: III. Separation of Certain Rare-Earth Elements By Electrophoresis on Paper Using Nitrilotriacetic Acid," in Russian; 10 pp with illustrations; Dubna 1963. (Moscow, Knizhnaya Letopis', No 4, 17 May 63, p 35)
- KAO Lu-lin, Moscow Geological-Prospecting Institute imeni S. Ordzhonikidze, author of dissertation for the scientific degree of Candidate of Technical Sciences, "Experimental Investigation of Certain Problems on Air Drilling of Prospecting Wells from the Mining Stope," in Russian. (Moscow, Vechernyaya Moskva, 6 May 63, p 4)
- KAO Yu-Hsi (7559/3945/4066)
- HSU Shu-ying (1776/3219/5391)
- Coauthors of a Monograph, Tung-ya Chi-feng ti Jo-kan Wen-t'i, (Some Problems of the East Asian Monsoon). (Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, p 73)
- KU Chi-fa, Mathematics Institute imeni V. A. Steklov, Academy of Sciences USSR; author of dissertation for the scientific degree of Candidate of Physicomathematical Sciences, "Maintenance Systems With Dispatcher," in Russian. (Moscow, Vechernyaya Moskva, 27 Apr 63, p 4)
- LI Ch'i-ch'en (2621/0366/3819), Department of Geophysics, Peiping University; author of article, "Radar Equation by Taking Into Consideration the Coherent Scattering of Radar Waves From Cloud and Raindrops," in English; first published in Chinese in Acta Meteorologica Sinica, Vol 32, No 2, 1962, pp 119-123. (Peiping, Scientia Sinica, Vol 12, No 5, May 63, pp 695-703)
- LI Ming-kang (2621/7686/1511), Sand Control Team, Chinese Academy of Sciences; author of article, "Taming the Desert." (Peiping, Chung-kuo Ch'ing-nien Pao, 28 May 63, p 4)
- LI Shih-lin, author of article, "Asymptotically Most Powerful Criterion for Testing for Composite Hypotheses," in Ukrainian. (Kiev, Dopovidi Akademii Nauk Ukrainskoy SSR, No 5, May 63, pp 583-588)

C-O-N-F-I-D-E-N-T-I-A-L

LI Ts'ai-hsiu, Moscow Power Engineering Institute; coauthor with A. V. Gubarev of article, "On the Effect of Flow Irregularity on Lattice Characteristics," in Russian. (Moscow, Teploenergetika, No 6, Jun 63, pp 46-48)

LING Mao-jung, Moscow Higher Technical School imeni N. E. Bauman; author of dissertation for the scientific degree of Candidate of Technical Sciences, "Theory of Coding Sounding Signals," in Russian. (Moscow, Vechernyaya Moskva, 9 May 63, p 4)

LIU Ch'eng-pin (0491/2110/2430)

HU Ping-cheng (5170/3521/8508)

WU Hui (0702/5057)

LIANG Chih-ch'uan (2733/2784/2938)

All affiliated with Department of Biochemistry, Institute of Experimental Medicine, Chinese Academy of Medical Sciences, Peiping; co-authors of article, "Studies on the Analysis of Purine and Pyrimidine Bases of Nucleic Acid: II. A Direct Spectrophotometric Method for the Analysis of the Purine and Pyrimidine Bases in Ribonucleic Acid," in English; first published in Chinese in Acta Biochimica et Biophysica Sinica, Vol 2, No 3, 1962, pp 173-181. (Peiping, Scientia Sinica, Vol 12, No 5, May 63, pp 673-684)

LIU Ch'ien-hua [sic], Moscow State University; author of dissertation for the scientific degree of Candidate of Chemical Sciences, "Investigation of Certain Physicochemical Properties of Germanium Chalcogenides," in Russian. (Moscow, Vechernyaya Moskva, 6 May 63, p 4)

LIU Hung-yun (0491/7703/0336)

SHA Ch'ing-an (3097/1987/1344)

Both of the Institute of Geology, Chinese Academy of Sciences; co-authors of an article, "Sinicite Systems in South China and the Problem of Their Stratal Position." (Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 65-68)

C-O-N-F-I-D-E-N-T-I-A-L

LIU Huo-ch'uan, Moscow State University; author of dissertation for the scientific degree of Candidate of Biological Sciences, "Dynamics in the Growth, Fattiness, and Fertility of the Roach in the Moscow River and in Reservoirs," in Russian. (Moscow, Vechernyaya Moskva, 14 May 63, p 4)

LIU T'ai-hsin, Department of Embryology, Leningrad State University, and Zoological Institute, Academy of Sciences USSR; author of article, "On the Problem of Early Developmental Stages of Epidermis in the Chick Embryo," in Russian; manuscript received for publication 5 July 1961. (Leningrad, Arkhiv Anatomi, Gistologii, i Embriologii, Vol 44, No 5, May 63, pp 106-111)

LU Chung-shu (0712/1813/1859)

LIANG Hou-kuo (2733/0624/2654)

Both of the Biology Department, Lanchow University; coauthors of an article, "Induced Respiratory Action in the Fruit of Melon Plants." (Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 62-63)

OU-YANG, Shou-ju, Magarach Institute, Crimea, Yalta; author of article "Some Data on the Physiology of Frost Resistance in Grape Plants," in Russian. (Moscow, Akademiya Nauk SSSR, Fiziologiya Rasteniy, Vol 10, No 3, May/June 63, pp 366-368)

SHEN Chung (3088/6988), Physical Chemistry Teaching and Research Section, Pharmacology Department, Peking Medical College; author of an article, "Adsorption and the Molecular Sieve." (Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 21-32)

SHEN Kung-mou (3088/7255/2804)

YANG Shan-yuan (2799/0810/0337)

SHEN Yun-kang (3088/0336/6921)

YIN Hung-chang (3009/1347/4545)

All affiliated with Institute of Plant Physiology, Chinese Academy of Sciences, Shanghai; coauthors of article, "Studies on Photophosphorylation: VI. Phosphorylation Coupled With the Photoreduction of 2,6-Dichlorophenol Indophenol by Chloroplasts," in English; first published in Chinese in Acta Biochimica et Biophysica Sinica, Vol 3, No 1, 1963, pp 59-66. (Peiping, Scientia Sinica, Vol 12, No 5, May 63, pp 685-693)

C-O-N-F-I-D-E-N-T-I-A-L

- SHIH Shih-yuan (2457/1102/0337); author of an article, "The Coupling Effect Between the Nuclear Core and Associated Nucleons in the Atomic Nucleus." (Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 49-51)
- SHIH Tien-ch'en, Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR; coauthor with V. G. Petrovskaya of article, "Differentiation of Colicin and Latent Phage in Experiment With E. coli," in Russian received for publication 13 May 1961. (Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 5, May 63, pp 90-94)
- SUN Wen-p'eng, Moscow State University; author of dissertation for the scientific degree of Candidate of Geological-Mineralogical Sciences, "Alpine Faulting in the Central Part of the Fergana Range," in RUSSIAN. (Moscow, Vechernyaya Moskva, 13 May 63, p 4)
- SUN Yun-chu (1327/0061/6999), Academy of Geological Sciences, Ministry of Geology, People's Republic of China; author of article, "On the Occurrence of Xystridura Fauna from Middle Cambrian of Hainan Island and Its Significance," in English; received for publication 3 Jan 1963. (Peiping, Scientia Sinica, Vol 12, No 5, May 63, pp 741-742)
- SUNG Lin-lin, Department of Acute Children's Infections, Institute of Pediatrics, Academy of Medical Sciences USSR; author of article, "The Fluorescent Method of Rhinocytoscopic Diagnosis of Influenza in Children," in Russian. (Moscow, Pediatriya, No 5, May 63, pp 15-20)
- T'ANG T'ien-fu, Geological Institute, Academy of Sciences USSR; author of dissertation for the scientific degree of Candidate of Geological-mineralogical Sciences, "Lithology and Phosphorescence of the Assel'skiy Layer in the Aktyubinsk Ural Area," in Russian. (Moscow, Vechernyaya Moskva, 29 Apr 63, p 4)
- TSENG Hsien-fu, coauthor with I. A. Kuzin and V. P. Taushkanov of article, "Purification of Uranium from Heavy Metals In Activated Carbon," in Russian; received for publication 3 Dec 1962. (Moscow-Leningrad, Akademiya Nauk SSSR, Zhurnal Prikladnoy Khimii, Vol 36, No 4, Apr 63, pp 703-707)

C-O-N-F-I-D-E-N-T-I-A-L

TSENG Nai-kung, Joint Institute of Nuclear Research at Dubna; coauthor with G. M. Osetinskiy and I. A. Chepurchenko of a pamphlet "Simultaneous Registration of the Angular Distribution of Products of Nuclear Reactions," in Russian; 14 pp with illustrations; Dubna 1963. (Moscow, Knizhnaya Letopis', No 4, 17 May 63, p 38)

TS'UI Meng-yuan, Institute of Physical Chemistry, Academy of Sciences USSR; coauthor with V. V. Azatyan and A. B. Nalbandyan of article, "Determination of Reaction Rate Constants When Atomic Hydrogen or Atomic Oxygen Interact With Ethylene," in Russian; received for publication 1 September 1962. (Moscow, Doklady Akademii Nauk SSSR, Vol 149, No 5, 11 Apr 63, pp 1095-1098)

TU Ho-kuei (2629/7729/2710), chief, Iron Smelting Laboratory, Northeast Engineering College; author of an article, "A Good Assistant Teacher From Our Laboratory." (Peiping, Kuang-ming Jih-pao, 27 May 63, p 2)

WANG Ch'un-yuan (3769/2504/0337)

WANG An-ch'i (3076/1344/3823)

Both of the Institute of Genetics, Chinese Academy of Sciences; co-authors of an article, "Studies of the Sensitivity to Radiation of the Embryonic Development of the Goldfish at Different Stages." (Peiping, K'o-hsueh T'ung-pao, No 4, Apr 63, pp 63-65)

WANG Yung-ch'ang

TU Yuan-ts'ai

Both affiliated with Joint Institute of Nuclear Research at Dubna; coauthors with V. A. Belyakov, N. M. Viryasov, Kim Hi-in, Ye. N. Kladnitskaya, A. A. Kuznetsov, Nguyen Dinh Thi, V. N. Penev, Ye. S. Sokolova, and M. I. Solov'yev of article, "A Study of the Properties of π^0 -Mesons Produced With Foreign Particles in π^- p- and π^- C-Interactions," in Russian. (Moscow, Akademiya Nauk SSSR, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 44, No 5, May 63, pp 1474-1480)

C-O-N-F-I-D-E-N-T-I-A-L

- WU Jung-jui, Moscow Textile Institute; author of dissertation for the scientific degree of Candidate of Technical Sciences, "Synthesis and Investigation of Properties of Certain Type of Graft Copolymers Based on Polyolefinic Fibers," in Russian. (Moscow, Vechernyaya Moskva, 28 Apr 63, p 4)
- WU Pi-hao, Moscow State University; author of dissertation for the scientific degree of Candidate of Geological-Mineralogical Sciences, "Study of the Geochemistry of Bromine in the Starobinsk Deposits," in Russian. (Moscow, Vechernyaya Moskva, 14 May 63, p 4)
- WU Tsun-hsu, Moscow State University; author of dissertation for the scientific degree of Candidate of Geological-Mineralogical Sciences, "Alkaline Rock of the Oktyabr'skiy Massif in Donetskaya Oblast and Their Interrelationship With Basic Rock," in Russian. (Moscow, Vechernyaya Moskva, 14 May 63, p 4)
- YANG Yuan-k'ai, Moscow Machine Tool Making Institute; author of dissertation for the scientific degree of Candidate of Technical Sciences, "Effect of Dynamic Error On Machine Tool Precision With Programing," in Russian. (Moscow, Vechernyaya Moskva, 6 May 63, p 4)
- YAO Lu-ang, Institute of Electrochemistry, Academy of Sciences USSR; author of dissertation for the scientific degree of Candidate of Chemical Sciences, "Kinetics of Electrochemical Processes in the System Quinone-Hydroquinone," in Russian. (Moscow, Vechernyaya Moskva, 12 Apr 63, p 4)
- YU Tsu-jiang, engineer; coauthor with Prof V. I. Layner of article, "Electrolytic Bronzing of Steel Parts," in Russian. (Moscow, Vestnik Mashinostroyeniya, Vol 43, No 5, May 63, pp 39-43).

* * *

Washington, D.C. 20505

7 September 2004

Ms. Roberta Schoen
Deputy Director for Operations
Defense Technical Information Center
7725 John J. Kingman Road
Suite 0944
Ft. Belvoir, VA 22060

Dear Ms. Schoen:

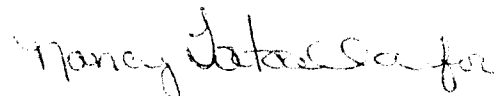
In February of this year, DTIC provided the CIA Declassification Center with a referral list of CIA documents held in the DTIC library. This referral was a follow on to the list of National Intelligence Surveys provided earlier in the year.

We have completed a declassification review of the "Non-NIS" referral list and include the results of that review as Enclosure 1. Of the 220 documents identified in our declassification database, only three are classified. These three are in the Release in Part category and may be released to the public once specified portions of the documents are removed. Sanitization instructions for these documents are included with Enclosure 1.

In addition to the documents addressed in Enclosure 1, 14 other documents were unable to be identified. DTIC then provided the CDC with hard copies of these documents in April 2004 for declassification review. The results of this review are provided as Enclosure 2.

We at CIA greatly appreciate your cooperation in this matter. Should you have any questions concerning this letter and for coordination of any further developments, please contact Donald Black of this office at (703) 613-1415.

Sincerely,



Sergio N. Alcivar
Chief, CIA Declassification Center,
Declassification Review and Referral
Branch

Enclosures:

1. Declassification Review of CIA Documents at DTIC (with sanitization instructions for 3 documents)
2. Declassification Status of CIA Documents (hard copy) Referred by DTIC (with review processing sheets for each document)



Processing of OGA-Held CIA Documents

The following CIA documents located at DTIC were reviewed
by CIA and declassification guidance has been provided.

OGA Doc ID	Job Num	Box	Fldr	Doc	Doc ID	Document Title	Pub Date	Pages	Decision	Proc Date
AD0335308	78-03117A	194	1	23	4363	Scientific Information Report Chemistry And Metallurgy (26)	3/7/1963	71	Approved For Release	3/25/2004
AD0335625	78-03117A	197	1	3	4460	Scientific Information Report Chemistry And Metallurgy (27)	4/4/1963	51	Approved For Release	3/25/2004
AD0336825	78-03117A	199	1	26	4562	Scientific Information Report Chemistry And Metallurgy (28)	5/9/1963	70	Approved For Release	3/25/2004
AD0332150	78-03117A	183	1	5	3916	Scientific Information Report Chinese Science (11)	10/4/1962	52	Approved For Release	3/29/2004
AD0332434	78-03117A	183	1	40	3951	Scientific Information Report Chinese Science (12)	10/19/1962	59	Approved For Release	3/29/2004
AD0332795	78-03117A	184	1	37	3988	Scientific Information Report Chinese Science (13)	11/5/1962	48	Approved For Release	3/29/2004
AD0333069	78-03117A	186	1	7	4028	Scientific Information Report Chinese Science (14)	11/16/1962	30	Approved For Release	3/29/2004
AD0333148	78-03117A	187	1	19	4078	Scientific Information Report Chinese Science (15)	11/29/1962	44	Approved For Release	3/29/2004
AD0333835	78-03117A	189	1	6	4144	Scientific Information Report Chinese Science (16)	12/21/1962	65	Approved For Release	3/29/2004
AD0334108	78-03117A	190	1	2	4179	Scientific Information Report Chinese Science (17)	1/10/1963	56	Approved For Release	3/29/2004
AD0334105	78-03117A	191	1	12	4230	Scientific Information Report Chinese Science (18)	1/18/1963	25	Approved For Release	3/29/2004
AD0334378	78-03117A	192	1	21	4277	Scientific Information Report Chinese Science (19)	2/1/1963	27	Approved For Release	3/29/2004
AD0334433	78-03117A	193	1	22	4322	Scientific Information Report Chinese Science (20)	2/15/1963	28	Approved For Release	3/29/2004
AD0335021	78-03117A	194	1	37	4377	Scientific Information Report Chinese Science (21)	3/8/1963	59	Approved For Release	3/29/2004
AD0335847	78-03117A	198	1	33	4526	Scientific Information Report Chinese Science (22)	4/18/1963	61	Approved For Release	3/29/2004
AD0336327	78-03117A	200	1	3	4578	Scientific Information Report Chinese Science (23)	5/2/1963	68	Approved For Release	3/29/2004
AD0337167	78-03117A	201	1	26	4643	Scientific Information Report Chinese Science (24)	5/23/1963	95	Approved For Release	3/29/2004
AD0337777	78-03117A	202	1	27	4687	Scientific Information Report Chinese Science (25)	6/6/1963	52	Approved For Release	3/29/2004
AD0338474	78-03117A	203	1	27	4727	Scientific Information Report Chinese Science (26)	6/20/1963	83	Approved For Release	3/29/2004
AD0338687	78-03117A	204	1	32	4772	Scientific Information Report Chinese Science (27)	7/5/1963	80	Approved For Release	3/29/2004
AD0339386	78-03117A	206	1	4	4820	Scientific Information Report Chinese Science (28)	7/17/1963	32	Approved For Release	3/29/2004
AD0339147	78-03117A	207	1	11	4862	Scientific Information Report Chinese Science (29)	7/30/1963	48	Approved For Release	3/29/2004
AD0340927	78-03117A	208	1	35	4924	Scientific Information Report Chinese Science (30)	8/21/1963	53	Approved For Release	3/29/2004
AD0341855	78-03117A	209	1	43	4974	Scientific Information Report Chinese Science (31)	9/5/1963	46	Approved For Release	3/29/2004
AD0342464	78-03117A	210	1	38	5013	Scientific Information Report Chinese Science (32)	9/16/1963	43	Approved For Release	3/29/2004
AD0342608	78-03117A	211	1	36	5054	Scientific Information Report Chinese Science (33)	9/27/1963	41	Approved For Release	3/29/2004